

Ontario's Draft Great Lakes Strategy



Prepared by:

The Government of Ontario

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Preface

The Great Lakes are vitally important to Ontario families. They provide us with drinking water, quality of life, and prosperity. We need to keep the Great Lakes healthy now, and for our children, grandchildren, and future generations.

That is why the Government of Ontario is seeking your feedback on this draft of Ontario's Great Lakes Strategy, to engage all

Protecting, Restoring, Using and Enjoying the Great Lakes. It also builds on subsequent engagement with a wide variety of Great Lakes experts, stakeholders and communities.

The Strategy focuses on empowering action by all partners on Great Lakes – from provincial ministries to local service clubs – and on restoring Great Lakes water, beaches and coastal areas. It aims to conserve biodiversity and deal with invasive species. It promotes environmentally sustainable economic benefits, now and into the



The watersheds of the Great Lakes are within the jurisdictions of Canada, the United States, the Provinces of Ontario and Québec, and eight Great Lakes States. (Ministry of the Environment)

Ontarians in setting priorities for action to protect, conserve and restore the Great Lakes.

This Strategy builds on the feedback the Province received on the vision, goals and strategies proposed in a 2009 discussion paper called *Healthy Great Lakes, Strong Ontario: Talking with Ontarians about*

future. The Strategy supports science to guide our Great Lakes work and addresses the need for climate change adaptation.

Please take the time to review the priorities this Strategy proposes. Give us your feedback, and help make sure the Great Lakes stay drinkable, swimmable and fishable.

Overview

Containing nearly 20 per cent of the Earth's fresh surface water, the Great Lakes are a global treasure. The coastlines of the Great Lakes and St. Lawrence River stretch from beyond Thunder Bay in the west to Québec in the east. These lakes underpin Ontario's high quality of life.

The Great Lakes support a diverse array of plants and animals, with rich ecosystems that are unique in the world. The lakes provide us with fresh drinking water, food and recreational opportunities. They also supply the province with sources of electricity and numerous other economic advantages that give Ontario a valuable competitive edge. The story of our province has been written through our connection to – and our dependence on – the Great Lakes.

Ontarians love their Great Lakes. Clean and beautiful beaches matter to Ontario families spending a day at the water's edge. The lakes provide enjoyment to cottagers, boaters, divers and campers. Their health is important to Ontario's municipalities who work to keep the water protected and safe to drink. They support a productive freshwater fishery. The lakes are vital to support manufacturing, agriculture and the transportation of Ontario's goods. For all these reasons, and for the intangible value these immense bodies of water give to our people, the Great Lakes are the foundation for Ontario's strength and success. We must protect them and, when we find them in jeopardy, we must restore them to good health.

The Ontario government, along with many partners, has been taking action to protect and



The Great Lakes from space. (NASA)

restore the Great Lakes. A key element of the government's ongoing commitment to Great Lakes protection and restoration is the proposed Great Lakes Protection Act. *The proposed act, if passed, would establish Ontario's direction on Great Lakes and create new tools to:*

- *empower communities*
- *improve water quality and*
- *protect wetlands, beaches and coastlines.*

The proposed act would promote collaboration and coordination amongst the Great Lakes community, including First Nations and Métis communities, Ontario ministries and other orders of government, environmental groups, scientists, farmers, industry, recreation and tourism sectors in order to share information, discuss priorities and develop initiatives. The act would help Ontario and our partners take action at the lake, coastal and watershed scale, as well as basin-wide.

The proposed act would be accompanied by a Great Lakes community action fund. Ontario plans to have the program underway by fall 2012, and to support hundreds of local projects over the next several years.



Lake Ontario on a still day. (Ministry of the Environment, E. Chatten, 2012)

This Strategy document discusses the various ways the Province plans to take action on protecting and restoring the Great Lakes. With the proposed act and this Great Lakes Strategy, we would strengthen existing partnerships and build new opportunities for greater success. The Strategy is designed to focus government resources across ministries, solicit and benefit from the views of other government and non-government partners, and engage First Nations and Métis communities.

The Strategy includes Ontario's portion of the geography of Lakes Superior, Huron, Erie and Ontario, their connecting rivers, the St. Lawrence River, the Ottawa River and surrounding watersheds and groundwater.

In the following pages, we discuss what we have done to protect the Great Lakes in the past, what we are doing now, and what our proposed actions are for the future. Future actions to protect and restore the Great Lakes-St. Lawrence River Basin ecosystem are organized around our *Great Lakes Goals*: empowering communities; protecting water; improving wetlands, beaches and coastal areas; protecting habitats and species; enhancing understanding and adaptation; and, ensuring environmentally sustainable economic opportunities and innovation.

We will report on our progress regularly and review this Strategy at least every nine years. This timing aligns the Strategy review with Great Lakes binational program timeframes. Regular reviews of the Strategy will allow us to respond to emerging issues and new science, and to establish new milestones on the way to reaching our Great Lakes Goals. In an ever-changing world, strong science will continue to be essential to defining issues and suggesting solutions. Research and monitoring partnerships provide the knowledge to set priorities, establish Great Lakes targets, and guide effective Great Lakes protection and restoration.

Many Ontario government ministries work together as caretakers of the Great Lakes. This draft Strategy builds on that work. It maps out how the Government of Ontario proposes to work with partners, individuals and communities to support the vision of *healthy Great Lakes for a stronger Ontario – Great Lakes that continue to be drinkable, swimmable and fishable*.

We want to hear from you. We encourage you to read the draft Great Lakes Strategy and to comment or provide your feedback. By incorporating the insights of Ontarians into Ontario's Great Lakes Strategy we can all become guardians of the Great Lakes, moving forward on actions to ensure clean, healthy and resilient Great Lakes – and a strong environmental legacy for future generations to enjoy.

Have Your Say on the Draft Strategy

Thank you for taking the time to review the draft of Ontario's Great Lakes Strategy.

The Great Lakes have an effect on virtually every aspect of every Ontarians' life. Many Ontario agencies have mandates that relate to Great Lakes and have worked to develop this Strategy. Now we are looking for your feedback.

What do you think of this draft of Ontario's Great Lakes Strategy? We value your comments and will take them into consideration before finalizing the draft Strategy. Please submit your comments using Ontario's environmental registry (www.ebr.gov.on.ca). This draft Strategy was posted on the registry on June 6, 2012 (registry number 011-6418) for 60 days of public review.

In particular, we are looking for your feedback on these questions:

- Does this draft Strategy address the best ways of providing opportunities to the people of Ontario to enjoy and protect the Great Lakes?
- Does this Strategy address the most important Great Lakes issues? What have we missed?
- Does this Strategy lay out the right areas of focus and the right actions for the Government of Ontario to pursue on Great Lakes protection? Which actions are most important to you?
- What targets would you suggest?
- What geographic areas do you see as the highest priority for action?
- Are there other opportunities for innovation to help protect the Great Lakes and create jobs?
- Does this draft Strategy include all the key partners who are needed to protect our Great Lakes?

Why We Need Action on the Great Lakes

Some successes...

In the 1970s, it became clear that the health of the Great Lakes was in jeopardy. Pollution and other pressures were taking their toll. During the 1970s, 80s and 90s, we achieved some significant success in restoring and protecting the Great Lakes, including:

- Cleaning up several highly polluted harbours, bays and waterfronts
- Dramatically reducing many toxic chemicals that were harming fish and wildlife
- Beginning to see the return of Bald Eagles, lake trout and other imperilled species, thanks to pollution reductions and focussed species and habitat rehabilitation, and
- Reducing Lake Erie algae problems by banning phosphate detergents, upgrading sewage treatment and enhancing adoption of environmental farm practices, to reduce nutrients entering the lake.

But New Problems are Overwhelming Old Solutions

Regrettably, today's pressures are overwhelming some of these past successes. The cumulative impacts of many pressures are hurting the Great Lakes' ability to naturally adapt to

changes and stresses. Many scientists have warned that the Great Lakes are at a "tipping point" of irreversible decline.¹ While Lake Superior is in generally good condition due to its larger size and relatively lower development pressure, many indicators of lake health² suggest that Lakes Huron, Ontario and Erie are in decline.

For example, on Lake Erie, binational State of the Lakes Ecosystem Reports note that phosphorus concentrations frequently exceed binational water quality targets, and conditions are deteriorating. Ontario scientists have found increasing nitrate levels at Lake Erie water intakes. Blooms of potentially toxic blue-green algae (cyanobacteria) have been increasing since the mid 1990s, and are reaching levels that some specialists compare to the problems of the 1960s and 1970s before phosphorus controls were first introduced. In eastern Lake Erie, a green algae called Cladophora is a widespread problem. Ontario scientists have found that two of the most toxic Great Lakes chemical types, mercury and PCBs, which were both successfully being reduced in the 1970s and 1980s, are again starting to increase in Lake Erie sport fish.³

¹ Bails, J., Beeton, A., Bulkley, J., DePhilip, M., Gannon, J., Murray, M., Regier, H., and Scavia, D. 2005. Prescription for Great Lakes Ecosystem Protection and Restoration: Avoiding the Tipping Point of Irreversible Changes.

² Indicators of Great Lakes health are tracked by the Province and many partners – see State of the Lakes Ecosystem Reports coordinated and released by Environment Canada and US Environmental Protection Agency.

³ Bhavsar et. al. 2007. Are PCB Levels in Fish from the Canadian Great Lakes Still Declining? *Journal of Great Lakes Research*. 33:592–605. Bhavsar et. al. 2010. Changes in Mercury Levels in Great Lakes Fish Between 1970s and 2007. *Environmental Science and Technology*. 44: 3273–3279.

Some of the Challenges in the Great Lakes Today

- **Growth:** Ontario's future population growth is expected to be concentrated around the Great Lakes. At an annual growth rate of six per cent, ours is the fastest-growing population among Great Lakes jurisdictions.⁴ While growth can bring economic benefits, it can also put stress on the ecosystem. For example, insufficiently treated urban stormwater, and even treated sewage, put unwanted phosphorus and contaminants into the Great Lakes. Some Great Lakes watersheds are under stress from growing water demand.

New roads, buildings and other development are costing us natural Great Lakes habitat.

- **Natural heritage:** Loss of fish and wildlife habitats such as wetlands are affecting ecosystem health and cost us commercial and sport fishing opportunities and natural and cultural heritage. The populations of some Great Lakes Species have declined to the point where they are now at risk in Ontario and are protected under the Endangered Species Act, 2007 (ESA).
- **Invasive species:** Invasive species are causing significant ecosystem disruption. Some populations of native fish species have declined dramatically. Invasive zebra and quagga mussels have reduced the amount of food

Coastal health and the “nearshore shunt”

Have you seen changes in your Great Lakes beach over the past decade? Sharp mussel shells underwater when you swim, sand that is becoming whiter from crushed shells, or bad-smelling masses of algae washing up on the shore – these changes are features of the “nearshore shunt.” Ontario scientists are leaders in identifying and explaining this phenomenon.

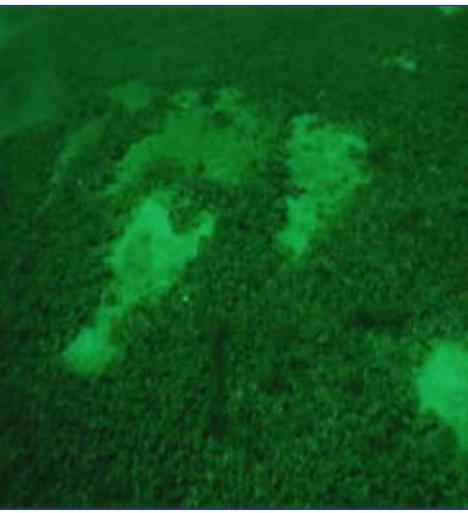
Zebra and quagga mussels are invasive species that now dominate Great Lakes nearshore ecosystems. They blanket the bottom of the lakes in staggering numbers across much of the Great Lakes. Mussels filter the water to get their food, with dramatic effects on the ecosystem. The water gets clearer, and more sunlight reaches the lake bed so more algae can grow there. Mussels also make the lake bed harder, so more algae can anchor to them. Finally, by trapping nutrients along the lake bed, mussels seem to supply “fertilizer” for the algae, which grow in abundance on the mussels, break off and wash ashore.

What is harder to see from the beach is the impact of these changes out in deeper water. As nutrients like phosphorus from Great Lakes watersheds are “shunted” or focused into the nearshore water, there is not enough phosphorus in the middle of the lakes. The offshore ecosystem is starved for nutrients. Offshore fish have lost important food sources and some fish populations have declined.

⁴ Sources: Ontario Ministry of Finance's Ontario population projection (2010) and U.S. Census Bureau's state population projections (2005).



1981: rocky lake bottom



2003: invasive mussels



2007: excess algae

The nearshore shift: Invasive zebra and quagga mussels have colonized the bed of Lake Ontario, leading to dramatic increases in algae growth. (Ministry of the Environment)

available for fish, while causing increases in unwanted algae along shorelines. They have caused clogging problems at drinking water and industrial water intakes, and damaged the fragile heritage shipwrecks popular with recreational divers. Invasive plants have taken over some shoreline areas. The threat of an Asian carp invasion is a major concern. Asian carp could devastate ecosystems and fisheries. Work with our federal and U.S. partners is essential to address these threats.

- Climate change: Impacts such as less ice cover, more evaporation and bigger storms, changing water levels, and high summer temperatures pose risks for Great Lakes communities and the ecosystem. For example, bigger storms lead to more water runoff, which sends pollution into the Great Lakes and also poses risks to public safety such as threatening needed infrastructure and increasing basement flooding problems.
- Chemicals of emerging concern: There are increasing concerns about newer chemicals, such as flame retardants and pharmaceuticals, from urban, industrial and agricul-

tural sources. Sewage treatment facilities were not designed to remove some chemicals, so keeping them out of sewers is the best approach.

- Water level regulation: Artificial controls on Great Lakes water levels are a stress on the wetlands of Lake Ontario and the upper St. Lawrence River, which rely on periodic high and low waters.
- Algae: More attached algae is growing in Great Lakes waters. Some shorelines are covered by slimy masses of these algae, a nuisance that degrades the quality of waterfronts. On Lake Erie, the fall of 2011 saw record levels of potentially toxic blue-green algae. Some bays in other parts of the Great Lakes, such as the Bay of Quinte, also experience problems with these blue-green algae blooms.
- Beaches: Some of Ontario's beautiful Great Lakes beaches are not only affected by aesthetic problems from excess algae, but also by excessive bacteria levels that make the waters less safe to swim. This is particularly a problem after heavy rains.

When beaches are posted as unsafe to swim, it costs individuals their opportunity to enjoy the Great Lakes. These beach-use advisories also have costs to the economies, reputations and quality of life of shoreline communities.

Potential Priority Geographic Areas for Focussed Attention

Challenges are different in different parts of Ontario's Great Lakes and St. Lawrence River Basin. There is no one-size-fits-all approach to Great Lakes issues.

Future work could focus on areas where issues have arisen and local partners have a clear interest in working with the Province to address the issues. In this draft of Ontario's Great Lakes Strategy, we are seeking feedback on priority geographic areas.

For example, here are some potential priority geographic areas, for discussion:

- On Lake Erie, many partners are concerned about excessive algae and phosphorus. Local work is already underway in many watersheds such as the Thames River and Grand River. Future work could focus on priority sub-watersheds. It could also expand the approach taken in the bays at Rondeau and Long Point – using green infrastructure to mitigate nutrients, create habitat and enhance biodiversity.
- On Lake Huron, one of the top concerns is improving shorelines and beaches along the southeast shores where communities, the Province and other partners are working to understand bacterial contamination and shoreline algae.

- On Lake Superior, ongoing Ontario support is needed to complete the proposed establishment of a federal National Marine Conservation Area. Concerns with toxic chemicals and with impacts of development are also local issues on Lake Superior.
- On Lake Ontario, a potential priority area is the western basin (Greater Golden Horse-shoe) where population and urban growth are putting pressure on the lake, and where stormwater, algae and loss of coastal habitat are all concerns. Work could build on existing science, and partnerships such as the Lake Ontario Collaborative Study, or others, to enhance coastal planning and action.
- At a local scale, Great Lakes beach issues continue to be a priority in many areas around the Great Lakes.

The Canada-U.S. Great Lakes and St. Lawrence River region supports 56 million jobs and a GDP of \$5.1 trillion.

Great Lakes waters help to generate 80 per cent of Ontario's electricity.

In 2011, Ontario's commercial Great Lakes fishing industry contributed about \$234 million to Ontario's economy.

Great Lakes recreational anglers contribute more than \$600 million to Ontario's economy each year in consumable goods and equipment.

Over 95 per cent of Ontario's agricultural land is in Great Lakes watersheds.

In 2010, Ontario saw over 73 million tourist visits in the Great Lakes Region with estimated spending of \$12.3 billion.

More than 80 per cent of Ontarians get their drinking water from Lakes Superior, Huron, Erie and Ontario.

The Great Lakes Basin is home for 40 million people, including 98 per cent of Ontarians and 40 per cent of Canadians.

There are over 4,000 species of plants, fish and wildlife in the Great Lakes Basin.

The Great Lakes contain nearly 20 per cent of the fresh surface water on the planet. If that water were spread evenly across North America, it would cover the continent to a depth of over 1.5 metres.

Great Lakes waters replenish slowly, at a rate of less than one per cent per year.

It takes 300 years for a drop of water to travel from Lake Superior through Lakes Huron, Erie, Ontario and the St. Lawrence River to the ocean.

Ontario has over 10,000 kilometres of Great Lakes and St. Lawrence River shoreline – more than all eight of the Great Lakes States combined.

Why do the Great Lakes matter to the people of Ontario?

Drinkable, swimmable, fishable Great Lakes give us a high quality of life. The lakes recycle and purify our drinking water. They provide us with food and electricity, and moderate our climate. Their natural beauty nourishes our spirits.

The Great Lakes region is one of the most ecologically diverse in North America. Variations in lake depth, climate, and geology help sustain a rich diversity of ecosystems, and plant and animal species. Some of these species are found nowhere else on Earth.

The Great Lakes are also a job-creation engine. If the Great Lakes Region (Ontario, Québec and the Great Lakes States) was a

country, it would be the world's fourth largest economy.

The state of the Great Lakes and St. Lawrence River Basin ecosystem matters not only to Ontario, but to Québec and to Canada as a whole. For example, these watersheds are home to nearly 40 per cent of Canadians, as well as 75 per cent of Canadian manufacturing. A third of Canada's employment in agriculture and food processing is in Ontario, and almost all of this is in Great Lakes watersheds.

The Great Lakes also matter to our U.S. neighbours, who depend on the health of this shared global treasure and are investing significantly in its restoration.

The Great Lakes have always been at the heart of North America's economy. For millennia, First Nations peoples have lived in the Great Lakes Basin – fishing, hunting, farming and trading, and maintaining a spiritual and cultural relationship with the Great Lakes. Today, Lake Erie supports one of the world's most valuable freshwater commercial fisheries as well as a popular sport fishery.

Many of Ontario's earliest communities are located along these lakes. The Great Lakes are considered a world underwater heritage resource, with the world's best freshwater collection of more than 4,700 shipwrecks from the 1700s to recent times. This includes the storied Edmund Fitzgerald, which is protected under Ontario legislation. At Great Lakes historic sites, Ontario is marking the bicentenary of the War of 1812 that was fought largely along the Great Lakes and helped shape the country.

Over the centuries, people from all over the world have been drawn to the growing com-

munities along Ontario's Great Lakes shores. The lakes continue to stimulate Ontario's economy and give Ontario a competitive edge. Manufacturing and other Ontario industries such as food processing rely on clean, cool Great Lakes water. Great Lakes shipping routes help move goods and products, stimulating \$15.9 billion in annual economic activity in Ontario and Québec.

The Great Lakes and St. Lawrence River contribute to the province's tourism sector. They are icons that help make Ontario a natural tourist destination for local and international visitors. Great Lakes waters form a natural environment for waterfront festivals and heritage attractions that strengthen communities, build local economies, and present opportunities for families to vacation close to home.

The Great Lakes also help us enjoy healthy active lifestyles. The lakes and their wetlands,



Ship entering the Welland Canal with Toronto in the background.
(St. Lawrence Seaway Management Corporation)



A SCUBA diver explores a historic shipwreck at Tobermory. (Ontario Tourism Marketing Partnership Corporation)

marinas and waterfronts offer many different recreational opportunities. Great Lakes coasts and beaches attract bird watchers, anglers, boaters, beach lovers and cottagers who flock to Great Lakes shores in the summertime. Great Lakes coastal trails draw walkers, hikers and cyclists. Families enjoy festivals, picnics and outdoor theatre at Great Lakes waterfront venues and parklands. Ontario's provincial parks, including 30 operating along the Great Lakes, attract 10 million visits every year. Over 100,000 annual visits are made to new provincial park visitor centres on Lake Superior,

Georgian Bay and the French River. To many Ontarians, Great Lakes nature holds spiritual significance as well.

Economic studies⁵ demonstrate that Great Lakes restoration and protection provide a high return on investment (see text box, page 58). For example, research on innova-



Mississagi River delta in the north channel of Georgian Bay.
(Ministry of Natural Resources, W. Bakowsky)

tive, low-impact development that minimizes stormwater runoff indicates an average 2:1 return on investment compared to traditional development practices. Protection of coastal wetlands provides even higher economic return ratios while helping to sustain Great Lakes ecosystem health. As the global demand for water-related technology increases, Great Lakes restoration can also play a role generating jobs and prosperity through the development of marketable water innovations.

Ontario's Role as a Great Lakes Guardian

With nearly 20 per cent of the world's fresh surface water and many unique ecosystems and species, the Great Lakes are a global treasure. For centuries, First Nations have lived in harmony with the Great Lakes and expressed a shared stewardship responsibility to protect these waters. These lakes touch the lives of people across Ontario.

Ontario is one of many custodians of these precious waters. At the same time, we hold a unique role.

Ontario borders run through four of the five Great Lakes and part of the St. Lawrence River. Ontario has the longest freshwater coastline in the world. This province has more of the Great Lakes and St. Lawrence River's water, and more of its coastline, than any other province or state.

Within Canada, Ontario shares constitutional jurisdiction for the Great Lakes with the

Indigenous cultures recognize, honour and respect water as a sacred gift that sustains all life.

Cultural identities, traditional and sacred laws and customs govern First Nations' perspectives and influence their relationship and stewardship responsibilities with the water and natural environment.

⁵ ICF Marbek (2010). "Assessing the Economic Value of Protecting the Great Lakes Ecosystem." For details visit ontario.ca/healthygreatlakes; Austin, J.C., et.al. (2007). Healthy Waters, Strong Economy: The Benefits of Restoring the Great Lakes Ecosystem. The Brookings Institution.



A family hikes along the Lake Superior coast at Pukaskwa National Park. (Ontario Tourism Marketing Partnership Corporation, Darren McChristie)

federal government, and works in partnership with Aboriginal peoples, municipalities and other partners. We have an important part to play in restoring, protecting and conserving the Great Lakes for our own benefit, and for future generations of Ontarians.

Over the years, the Government of Ontario has been purposeful in introducing legislation, policies and programs that contribute to Great Lakes protection. This helps ensure that Ontario families can enjoy Great Lakes beaches and shorelines, that fisheries are restored and sustained, and that our tap water remains some of the highest-quality drinking water in the world.

Ontario's Great Lakes Strategy will help us address new and ongoing challenges, and take advantage of Great Lakes opportunities. We welcome your comments on this Strategy.



Making "fish prints" at Lake Superior Day, 2011 in Thunder Bay (EcoSuperior, Jim Bailey, 2011)

Building On Ontario's Great Lakes Accomplishments

Where We Have Been

Ontario has a set of programs and laws that support Great Lakes protection.

In previous decades, the Ontario Water Resources Act and Environmental Protection Act established permit and approval systems to manage water quality impacts of municipal and industrial sewage and stormwater. Ontario



A wavy day in Georgian Bay. (Ontario Tourism Marketing Partnership Corporation, J. Speed, 2010)

also introduced permits to manage large water takings and protect water quantity.

The Province established resource management laws and a network of provincial parks and protected Crown lands. Conservation authorities were created in many watersheds to prevent natural hazards such as flooding.

Collaboration has long been central to Great Lakes protection. Ontario and Canada signed their first agreement on shared Great Lakes protection over 40 years ago, in 1971.

Phosphorus pollution was one of the main problems tackled under the first Canada-Ontario Agreement of 1971, and the first Canada-U.S. Great Lakes Water Quality Agreement of 1972. Governments launched major programs to improve sewage treatment and reduce the amount of phosphorus flowing into the lakes. Phosphorus in laundry detergents was restricted as well.

This resulted in one of the most successful ecosystem cleanups in North America. For example, despite a constantly increasing population, phosphorus levels in Lake Ontario declined dramatically – levels dropped 44 per cent between 1973 and 1982. In Lake Erie, where the problem was most severe, the phosphorus in Canadian municipal sewage discharges was reduced by 82 per cent. Lake Erie went from being declared “dead” in the media, to once again being a healthy lake with good water quality, supporting economically important fisheries, and boasting beautiful beaches and coastlines for Ontarians to enjoy.

Another example of shared success on Great Lakes was in toxic chemical reductions. For example, DDT became widely used as a pesticide after World War II. However, DDT and its residues washed into nearby waterways where aquatic plants and fish absorbed it. Bald Eagles were poisoned with DDT when they ate the contaminated fish, causing their eggshells to be so thin that chicks often didn’t survive to hatch. In the 1960s the species was in danger of extinction. As the danger of DDT became known, its use was restricted in Ontario starting in the early 1970s, and banned in 1988. DDT levels in Great Lakes

sediment and fish declined dramatically and Bald Eagles staged a remarkable population rebound. Other chemicals such as mercury, PCBs and mirex were also a focus for successful Great Lakes protection and restoration through the 1970s and 1980s.

These achievements prove that, while complex, Great Lakes issues *can* be solved. With collective action sustained over time, we can accomplish great things for our Great Lakes.

Where We Are Now

Ontario is working with partners to implement many new Great Lakes protections.

Source-to-tap drinking water protections:

Ontario is recognized as a leader in drinking water safety around the world. The Province has implemented all 121 of Justice O'Connor's 2002 Walkerton Report recommendations, creating an award-winning drinking water safety net for protecting drinking water from source to tap. In 2010-11, of over 600,000 drinking water quality tests, 99.9 per cent of results from municipal residential systems met Ontario's drinking water standards. In cases where standards were not met, drinking water inspectors and public health inspectors worked with the system owner or operator to make sure that appropriate corrective actions were taken to resolve the situation.

Source water protection under the Clean Water Act, 2006, is an essential element of Ontario's drinking water safety approach. The goal is to protect sources of drinking water – lakes, rivers and underground aquifers – by identifying and managing risks to the quality and quantity of municipal sources of drinking water.

Under the Clean Water Act, 19 local source protection committees (18 of which are in the Great Lakes Basin) have been established in watersheds across Ontario. The committees represent a broad range of stakeholders and are responsible for carrying out local source protection planning through a collaborative, science-based approach. Most source protection plans will be drafted and ready for government review by August 2012. First Nations that have reserves

Ontario Clean Water Agency (OCWA), a provincial Crown Agency, is committed to ensuring all Ontarians have access to a provider of safe and reliable water and wastewater services.

- **Operations:** As the operator of over 200 wastewater treatment plants in Ontario, many within the Great Lakes Basin, OCWA ensures facilities contribute to Great Lakes protection.
- **Emergency Support:** Emergency response teams can be deployed at any time for water or wastewater emergencies.
- **Safety First:** Demonstrating outstanding safety training expertise, OCWA ranked 'First in Safety' at the 2011 Water Environment Federation's Technical Exhibition and Conference.
- **Future Focus:** Innovation and partnerships in Ontario and globally to promote the development, testing, demonstration and commercialization of water/wastewater technologies and services in support of the Water Opportunities Act, 2010.



The Great Lakes are a source of some of the best quality drinking water in the world. (Ministry of the Environment)

within source protection areas can appoint First Nations representatives to a source protection committee and include their drinking water system in the source protection planning process. The Chippewas of Rama, Kettle and Stony Point First Nation, and Six Nations of the Grand River have all opted to include their drinking water systems in source protection plans.

The development of these plans has been supported by almost \$200 million in Ontario investments in watershed science, assessment and planning. The Province has also provided funding to help landowners and businesses take early on-the-ground actions to protect water sources. Provincial ministries, municipalities, conservation authorities and individual property owners all have roles in helping implement these plans.

This watershed-based approach focuses on local communities and the protection of their

drinking water supplies. Approximately 130 conservation authority staff and over 300 source protection committee members have been working to assess and plan for source water protection. A source protection committee's membership is representative of the particular watershed, with one third municipal representation, one third from local sectors such as agriculture and business, and one third from the broader public, as well as First Nations representation.

Lake Simcoe: The Lake Simcoe watershed is home to more than 350,000 people and offers many benefits: water to drink and play in; fish to eat; a beautiful natural environment; and many economic benefits such as farming and recreation.

The Lake Simcoe Protection Act, 2008 provides a legal framework for protecting the Lake Simcoe watershed. The act includes clear objectives, and requires the development of a Lake Simcoe Protection Plan with legally binding policies. It also establishes committees to provide advice, and legal authority to regulate protection of the shoreline.

The Lake Simcoe Protection Plan was developed with the help of watershed protection scientists, many local people, and groups including the Lake Simcoe Region Conservation Authority, Chippewas of Georgina Island First Nation, municipalities, agricultural and conservation groups, developers, and tourism and recreation operators, through a collaborative process. The plan is a model for watershed action to restore the health of the lake. It focuses on Lake Simcoe's most critical issues, including the health of fish and other

aquatic life, water quality and phosphorus reductions. It also addresses protecting and rehabilitating important natural areas such as shorelines, water quantity stresses, and the impacts of invasive species, climate change and recreation.

Ontario's strategy to reduce phosphorus levels in Lake Simcoe will help ensure the long-term protection of the lake ecosystem. Targets call for reducing the high phosphorus levels in the lake by almost 40 per cent, to improve water quality and protect coldwater fish. Based on a vision of shared responsibility, it seeks continued phosphorus reductions over time. It is a long-term approach to address cumulative impacts.

Greenbelt: Ontario has established provincial plans to provide strong protection for some other significant environmental areas within the Great Lakes Basin. The Greenbelt Plan, for example, provides for the world's largest expanse of protected agricultural and environmentally sensitive landscapes, 720,000 hectares spanning across the Greater Golden Horseshoe and extending to the tip of the Bruce Peninsula.

The Greenbelt is helping to manage growth, build a sustainable green economy and protect the environment – all of which will help to build prosperous and more liveable communities for Ontarians. It protects headwaters and many river valleys that flow to Lake Ontario and Georgian Bay.

Toxic chemicals: Ontario is helping to reduce toxic chemicals that impact the Great Lakes.

By eliminating coal-fired electricity generation in Ontario by 2014, the Province will reduce mercury and other pollution, making



MOE field staff collecting samples of benthic invertebrates (sediment-dwelling bugs) in the Whalesback Channel downstream from the Spanish River. (Ministry of the Environment)

our air safer to breathe and Great Lakes fish safer to eat. A local air quality regulation established in 2005 also helps reduce the contaminants that ultimately reach the lakes.

In 2009, Ontario introduced the Toxics Reduction Act, 2009, and launched a Toxics Reduction Strategy. Ontario's major industrial facilities are now developing plans to reduce their use, generation and release of toxic chemicals. Ontario is also promoting innovative "green" chemistry that provides safer alternatives to toxic chemicals. For example, in 2009, Ontario announced \$13.6 million in funding

for GreenCentre Canada, to help connect green chemistry discoveries in Ontario universities to companies in order to bring safer alternatives to the marketplace faster. Ontario also established Chairs in Green Chemistry and Engineering at Queen's University and Trent University.

Ontario banned the use of cosmetic pesticides in 2009. A before-and-after study of 10 urban streams across the province showed 80 per cent decreases in three pesticides commonly used in lawn care products.

To improve spill prevention, Ontario introduced regulations for spills prevention and contingency planning requirements as well as



Containing a spill on Bronte Creek, a Lake Ontario tributary. (Ministry of the Environment, 2010)

environmental penalties in 2007, so that communities along the St. Clair River and in other parts of Ontario are better protected from toxic spills. Nine industrial sectors face penalties if they violate Ontario's water protection rules. As of 2011, over \$760,000 in penalties have been collected. This money is funding local community projects to clean up and improve waterways, restore habitat for species at risk, and engage people in water quality protection.

Water innovation: Ontario is committed to becoming a continental leader in water innovation. The Water Opportunities Act, 2010, set the stage for innovation to create economic opportunities and clean-technology jobs, and to conserve and sustain Ontario's water resources.

The Water Technology Acceleration Project is promoting the development of Ontario's water and wastewater sectors. This water technology hub is bringing together industry, academia and government to develop Ontario's water technology and services sector and promote it abroad. A \$17 million program called Showcasing Water Innovation supports leading-edge solutions for drinking water, wastewater and stormwater in Ontario communities. Ontario is also partnering with universities, equipment vendors, the federal government, IBM Canada and others on the Southern Ontario Water Consortium, which had raised \$60 million as of 2012 for water research and technology development, testing and demonstration. The WaterSense labelling system for water-efficient household products, introduced in 2012, will help families conserve water and save money. These projects will help Ontario communities manage water systems in an integrated way and find innovative, less costly solutions to protecting water.

Spills Action Centre

If you see a spill or other environmental emergency, call the Spills Action Centre's toll-free number at 1-800-268-6060. Environmental officers are there 24 hours a day, to activate emergency response and provide other advice and information.

To help improve water infrastructure, provincially-funded collaborations are also supporting evaluations of new pollution removal technologies and other infrastructure innovations.

Water infrastructure: Municipal water infrastructure has been supported by major provincial investments. Since 2007, the Province has committed approximately \$653 million to wastewater and stormwater infrastructure projects that will significantly reduce pollution into the Great Lakes. This includes \$50 million so the municipalities of Red Rock, Nipigon, Owen Sound, Cornwall and South Dundas can upgrade their sewage treatment plants to meet standards. In addition, in 2011, Ontario committed more than \$40 million from Phase Three of the Ontario Small Waterworks Assistance Program to help 85 small rural and Northern communities receive clean, safe and affordable water and wastewater services.

Ontario signed the Canada-wide Municipal Wastewater Effluent Strategy in 2009. The federal wastewater strategy builds on many years of input from the provinces and territories, to set Canada-wide standards for the traditional wastewater quality measures, as well as future reductions in harmful pollutants, combined sewer overflows and sewage treatment plant bypasses.

Through inspections and compliance work, Ontario encourages development of municipal Pollution Prevention Control Plans to reduce bypasses and overflows.

A review of stormwater policies completed in 2010 revealed the need for greater emphasis

Since 2003, the Province has supported local water and wastewater infrastructure by committing approximately \$1.8 billion in grants and \$1.9 billion in loans from Infrastructure Ontario, helping to ensure water and wastewater services.



Stormwater outfall to Lake Ontario, Lucas Point Park, Cobourg Ontario. (Ministry of the Environment, E. Chatten, 2012)

on “green infrastructure” (low impact development) such as constructed wetlands, combined with conventional stormwater systems such as storm sewers and ponds. Stormwater improvements help communities adapt to impacts of climate change, and reduce sewage overflows and bypasses. With partners such as conservation authorities, Ontario has initiated outreach and guidance on integrated stormwater practices.

Infrastructure planning, and in particular asset management, is required to prioritize where investments are most needed. Through Ontario’s ten-year infrastructure plan, *Building Together*, the Province will work to ensure the financial and environmental sustainability of municipal water, wastewater and stormwater systems. Key activities include making

Ontario works with Great Lakes cities that are leading the way on stormwater and other water infrastructure challenges:

- The City of Welland evaluated climate change risks to stormwater and wastewater systems, and updated the local predictions of expected rainfall intensity duration and frequency, to help prioritise infrastructure investments.
- The City of Hamilton completed a model approach to approving stormwater reuse and low impact development on private commercial and industrial property.
- The City of Oakville is collaborating with Halton Region on integrated planning for sustainable water, stormwater and wastewater systems, including the assessment of climate change impacts and other risks.
- The City of Thunder Bay is implementing changes to its wastewater and water treatment systems that promises to improve efficiency, reducing both energy use and wastewater volumes.

improved asset management and financial management practices preconditions for provincial infrastructure grants and rolling out requirements under the Water Opportunities Act, 2010. The act provides for a more integrated approach to water, wastewater and stormwater infrastructure through the potential to develop Municipal Water Sustainability Plans.

Water quantity: Ontario advanced Great Lakes water quantity protection in 2005 by signing the historic Great Lakes–St. Lawrence River Basin Sustainable Water Resources Agreement with Québec and the Great Lakes States. This agreement commits Ontario and its partner jurisdictions to:

- a virtual ban on water diversions
- a basin-wide environmental standard for water uses
- better conservation measures, and
- an increased role for science in decision making.

The Ontario Legislature amended the Ontario Water Resources Act to allow implementation of key commitments in this agreement. Ontario also introduced a charge for water use by companies that incorporate water into their products, such as bottled water and food processors, so that water users help cover the costs of protecting water.

Under the Clean Water Act, 2006, source protection committees are evaluating risks to the quantity of their drinking water supplies, and developing water quantity protection policies where needed to protect drinking water sources.

Climate change adaptation: *Climate Ready: Ontario's Adaptation Strategy and Action Plan* will help ensure climate change adaptation is integrated into Ontario's Great Lakes programs. Several provincial initiatives are helping Ontario communities adapt to climate change.

Source protection committees and source protection authorities are being provided with training and technical support to ensure water budgets, a key component of source protection plans, take into account adaptation considerations.

A web portal called the Weather and Water Information Gateway⁶ has been developed

⁶ This climate change adaptation tool can be accessed by going to www.mnr.gov.on.ca/en/Business/ClimateChange, and clicking on “adapt”.

to provide data that municipalities, conservation authorities and others can use to assess their water-related vulnerabilities to a changing climate and facilitate community-level action.

The Province has developed a user-friendly, interactive web-enabled municipal climate change risk assessment guide and workbook, designed for use by small and medium-sized municipalities to help them develop climate adaptation strategies. Over the past two years, the Province has funded and supported numerous training sessions and tools to build adaptation knowledge and capacity to plan for climate change in communities across Ontario, including those situated in the Great Lakes Basin.

Ontario also participates in international studies that consider the role of adaptive management to better anticipate and respond to future Great Lakes water level changes primarily influenced by climate. Adaptation can help both the environment and our social and economic interests in the Great Lakes.

Land use planning: Improvements to the planning and land use framework include the 2005 Provincial Policy Statement, the foundation of Ontario's land use planning system, and the Places To Grow Act, 2005, which guides growth planning.

Municipal planning decisions are required to "be consistent" with the Provincial Policy Statement. This includes policies relevant to the Great Lakes, such as protection and management of natural resources like water and wetlands, and managing the development and growth of our communities. To support effective land use policy, the Provincial Policy



The City of Thunder Bay is improving its wastewater and water treatment systems. (Darren McChristie)

Statement is currently under review and will be out for public comment this year. The review is examining whether land use planning policy changes are needed for environmental protection and other provincial interests.

Ontario also introduced new rules to encourage the transformation of old unused industrial lands called brownfields, along our Great Lakes coasts, into vibrant, healthy and active waterfronts.

Farm stewardship actions: Ontario established a Nutrient Management Act that helps to match nutrient application to crops' fertility needs and to keep excess nutrients and pathogens out of waterways. Farmers are imple-



Huron County landowner planting a vegetated buffer strip along a wetland. (Ministry of Natural Resources)

menting nutrient management requirements under this act, and are taking voluntary action through the Environmental Farm Plan partnership program to improve farm environmental performance. From 2005/06 through 2010/11, Ontario farmers put nearly \$200 million into on-farm environmental improvements as part of cost-sharing programs supported by \$111 million in federal, provincial, conservation authority and private foundation funding.

Managing growth: The Places to Grow Act sets out the framework for where and how growth should occur. The act enables the

establishment of growth plans in Ontario, with input from local officials, stakeholders and the public.

The first growth plan was developed in 2006 for the Greater Golden Horseshoe around the western end of Lake Ontario, one of the fastest-growing regions in North America. It is a 25-year plan that seeks to direct growth to existing communities to make the best use of infrastructure while limiting urban sprawl and its impacts on our natural, agricultural and water resources. It also promotes water conservation and efficiency. Recent analysis suggests that progress is being made, including more compact, mixed-use development and more transportation options.

The Growth Plan for Northern Ontario was developed in 2011 and includes the watersheds of Lake Superior and part of Lake Huron, including northern Georgian Bay. This plan aims to strengthen the economy of Northern Ontario by diversifying the region's traditional resource-based industries and stimulating new investment and entrepreneurship. It recognizes the importance of the Great Lakes as both valued environmental features and economic resources. The Plan provides for the protection of water resources in Northern Ontario municipalities, with policies aimed at protecting surface water and groundwater features and promoting water conservation.

Habitats and Species: To protect the diversity of plants, animals and other living things, the first Ontario Biodiversity Strategy was released in 2005. The Provincial Parks and Conservation Reserves Act, 2006, and the Endangered Species Act, 2007 also help to conserve the Great

Lakes' natural environment including native fish and birds, plants and insects, and the places they inhabit.

Ontario continued the fight against invasive species with a regulation in 2005 that made it illegal to possess live invasive fish, including Asian carp.

The Ontario Biodiversity Council renewed Ontario's Biodiversity Strategy in 2011, strengthening Ontario's commitment to safeguard our amazing variety of species and ecosystems. Building on the positive achievements of Ontario's 2005 Biodiversity Strategy, the renewed Biodiversity Strategy lays out an ambitious but practical conservation agenda for years to come and was written to encourage and inspire participation from all sectors, government and individuals. The Government of Ontario is developing an Implementation Plan using the 2011 Biodiversity Strategy as a



A Monarch on a Pitcher's Thistle in a Great Lakes dune ecosystem. (Ministry of Natural Resources, M. Wester)

guiding framework. This Plan will outline key actions and supporting activities the Ontario government will take to conserve the province's biodiversity. Collectively, these actions and activities support the objectives and outcomes outlined in the Biodiversity Strategy and its overall vision, goals and targets. Other sectors, organizations and individuals are encouraged to develop their own implementation plans,



Ontario is working with partners to keep silver carp (seen here jumping after being disturbed by boats on the Illinois River) out of the Great Lakes. (Great Lakes Fishery Commission, Ted Lawrence)

Great Lakes Wetlands

Coastal wetlands are recognized in Ontario and throughout the world as important natural areas. "Provincially Significant Wetlands" are areas identified by the Province as being the most valuable. The protection of our wetlands has been strengthened by recent changes to provincial policies, regulations, and legislation, including the Provincial Policy Statement.

Ontario also works with partners who are promoting wetland conservation through education and public outreach, land acquisition, land use planning and stewardship incentive programs.

recognizing that no one government, organization or sector can deliver the scale of change needed to conserve biodiversity on their own – we all have a role to play.

In 2011, Ontario released a draft of the Ontario Invasive Species Strategic Plan for consultation. The Strategic Plan will provide a framework to prevent, detect and respond to new invasive species, and manage and adapt to those invasive species already established in Ontario.



The threatened Fowler's toad breeds in and along Lake Erie.
(Ministry of Natural Resources, Mike Oldham)

Controls on invasive aquatic plants such as Phragmites and purple loosestrife are being implemented in coastal wetlands, along with monitoring and assessment programs for invasive fish species in the Great Lakes. Ontario is collaborating with others around Lake Superior on a binational initiative called the Lake Superior Aquatic Invasive Species Complete Prevention Plan. For 20 years, Ontario has partnered with

the Ontario Federation of Anglers and Hunters to deliver the Invading Species Awareness Program – educating the public on ways to prevent the introduction and spread of invasive species, such as monitoring for invasive species through citizen science, and providing a reporting mechanism for sightings. More recently, Ontario developed a coordinated plan for quick action to prevent Asian carp from spreading if they are found in Ontario's Great Lakes waters.

Islands of Life – A Biodiversity and Conservation Atlas of Great Lakes Islands, was released in 2010. This partnership with the Nature Conservancy of Canada builds on the 2005 Great Lakes Conservation Blueprints for Biodiversity that identified priority lands for conservation.

The *Great Lakes Wetlands Conservation Action Plan*, developed in 1994, brings government and non-government partners together to more effectively conserve wetlands and implement the 25-year *Strategic Plan for Wetlands of the Great Lakes Basin*.

In collaboration with Great Lakes States, federal agencies and other partners, we have developed binational biodiversity conservation strategies for Lakes Ontario and Huron. Through collaboration with federal agencies and many other partners, Ontario has made progress on protecting and restoring habitats and in rehabilitating native Great Lakes species. For instance, Ontario's bald eagle populations have recovered to the point where they are no longer listed as endangered. Other Great Lakes species such as lake sturgeon and American eel are protected under the Endangered Species Act (ESA). The ESA also provides habitat protection for species that are threatened or endangered.

Tourism: Ontario continues to promote Great Lakes locales as tourist icons. This includes partnering with local communities and non-governmental groups to enhance tourism and cultural infrastructure along the Great Lakes. For example, Ontario has supported Lake Ontario's Waterfront Regeneration Trust and many local partners to expand trails, parks, and facilities so that Ontarians can enjoy waterfront experiences along the Niagara River and the Lake Ontario shoreline, from Lake Erie to Kingston.

Partnerships, agreements and collaboration: Collaboration is essential to make progress on the Great Lakes. A wide variety of agencies, organizations, communities and individuals – including First Nations and Métis communities, municipalities, conservation authorities and volunteer groups – all contribute important tools and expertise. For example, source protection committees continue to take a partnership approach to protecting drinking water sources across the Great Lakes Basin.

Agreements have been critical to past Great Lakes successes. Ontario partners with the Canadian and U.S. federal governments, Great Lakes States and others on lake-based management plans for each of Ontario's four Great Lakes. Other collaborations across borders include cooperative management of Great Lakes fisheries, a nutrient strategy for Lake Erie, and collaboration with Québec and the Great Lakes States on shared water quantity protection. Ontario also supports the important work of the International Joint Commission, which provides binational advice and oversight on Great Lakes.



Manitoulin Island, Lake Huron. (Ontario Tourism Marketing Partnership Corporation, J. Speed, 2002)



Wheatley Harbour, on the north shore of Lake Erie, was delisted as an Area of Concern in 2010. (Ministry of Natural Resources)

Aboriginal communities are important partners in implementing the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA).

The Mohawk Council of Akwesasne is a signatory to and implementing partner on the administrative controls protocol of the Cornwall Sediment Strategy, which promotes long-term protection from historically contaminated sediments in the St. Lawrence River (Cornwall) Area of Concern.

The Six Nations of the Grand River and the Mississaugas of the New Credit are members of the Steering Committee that is updating the Water Management Plan for the Grand River watershed. This Plan will guide future water resource decision-making in the watershed. An updated Plan is anticipated by 2013.

As part of the Lake Huron Binational Partnership, local First Nations and Métis have been invited to participate in the Lake Huron Southeast Shore Initiative. The purpose of this initiative is to address nuisance algae concerns and promote safe, clean beaches and shorelines from Sarnia to Tobermory, which was identified as a priority area for action under the 2007 COA.

The Ojibways of the Pic River First Nation have been engaged in the development of a sediment remediation project for the Peninsula Harbour Area of Concern. It will improve water quality and help ensure the health of the harbour's natural habitat.

The Canada-U.S. Great Lakes Water Quality Agreement (GLWQA) sets out binational priorities. An amended GLWQA is anticipated in 2012 and is expected to include a focus on habitat and species, climate change impacts,

and aquatic invasive species. These issues are also priorities for Ontario. Ontario generally supports Canada's efforts to strengthen and update the binational GLWQA, and encourages Canada to engage broadly with its many Great Lakes protection partners on implementing its commitments.

In Ontario, the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) contains commitments to help implement lake-specific plans, support hot-spot cleanup, reduce harmful pollutants and address lake and basin sustainability. Signed in 2007, the most recent COA (the seventh such agreement) was amended in 2011 with new commitments to develop better planning for the Great Lakes nearshore, and to improve collaboration on spills prevention and response. Ontario committed approximately \$51 million to action under COA between April 2007 and March 2012.

A priority under COA is collaborative restoration of 17 "Areas of Concern", so that once-degraded harbours and waterfronts can again be safe, clean, healthy places for people, plants, fish and wildlife. Progress to date includes cleanup of Collingwood Harbour, Severn Sound and Wheatley Harbour, and completion of clean-up actions at Spanish Harbour and Jackfish Bay. These successes show how much governments and local partners can do together to make a difference for the Great Lakes and their communities. Work continues at the 12 other Areas of Concern.

From April 2007 to the end of March 2012, Ontario invested \$14.3 million on restoring



Map showing binational Great Lakes Areas of Concern. (adapted from Environment Canada)

the Areas of Concern. Ontario is also providing \$1.6 million in funding in 2012 towards contaminated sediment capping in the Peninsula Harbour Area of Concern. Sediment in Peninsula Harbour is contaminated from historical discharges from the local pulp mill, which closed in 2009. This project will accelerate natural recovery by reducing plant, animal and fish exposure to chemicals in the sediment, and reducing the spread of contaminated sediments to the rest of the harbour.

The current COA expires in June 2012. Ontario will continue to collaborate with federal agencies and local partners on Great Lakes protection projects while pursuing a new agreement. Ontario will seek to negotiate with Canada, consult with partners and the

public, and have a new agreement with Canada in place as soon as possible. Given national interests in the Great Lakes, it is important that Canada be a strong partner with Ontario through the next agreement.

Ontario continues to strengthen its relationship with First Nations and Métis communities through collaboration in developing and implementing Great Lakes protection initiatives. The *Water Declaration of the Anishinaabek, Mushkegowuk and Onkwehonwe in Ontario* articulates the First Nations cultural values, perspectives and responsibilities linked to protection of the waters including the waters of the Great Lakes. Our shared environmental protection values provide a basis to pursue future dialogue and action with First

Nations communities. Many valuable collaborations are already underway, including restoration action at Great Lakes Areas of Concern such as the St. Clair River, the Bay of Quinte, and the St. Lawrence River at Cornwall.

Cities are critical partners in identifying Great Lakes priorities and taking action. Since 2008, Ontario has been collaborating with the Great Lakes and St. Lawrence Cities Initiative through a Memorandum of Cooperation. Ontario also collaborates with municipalities directly, and through the Association of Municipalities of Ontario.

Community-based groups, industries, private foundations, conservation authorities, and non-governmental organizations are all essential partners as well. Many sectors of Ontario society collaborate on Great Lakes protection.

Shaping Future Action On Great Lakes

Healthy and resilient Great Lakes, their shorelines and their watersheds have an effect on virtually every aspect of life in Ontario. While we have been making real progress, we need to do more. We need to focus on the areas along the coastline that need priority attention. We need enhanced tools to specifically target the Great Lakes. And we need to work with and support the many partners who can play a vital role in protecting our shared Great Lakes.

This proposed Ontario's Great Lakes Strategy builds on your advice in response to our 2009 *Healthy Great Lakes, Strong Ontario* discussion paper, and on many types of

expertise across the Ontario government. Economic, environmental, social, health, cultural and natural resource experts have all made important contributions. The proposed Great Lakes Protection Act, 2012 and the Strategy build on a strong foundation to address the many complex and interconnected issues, and to improve Great Lakes protections.

We need to hear from you. Your feedback on this draft Strategy is important and it will help shape future action on Great Lakes.

Where We Are Headed: Proposed Great Lakes Protection Act

The Government of Ontario has taken a significant step forward on Great Lakes protection by introducing, in the Ontario Legislature, the proposed Great Lakes Protection Act. The overall intent of the proposed act is to help ensure the Great Lakes stay drinkable, swimmable and fishable.

In introducing the proposed act, Ontario is delivering on a commitment in the November 2011 Speech from the Throne, to: *“follow through on its goal to become the continent’s water innovation leader by 2015 and work with environmental experts and community groups to develop and introduce a Great Lakes Protection Act. These and other measures enhance the affordability and quality of life in Ontario. And this, in turn, attracts the world’s top talent and new investment in jobs and growth.”*

The Need for a Great Lakes Protection Act

The Great Lakes are vital to the well-being of all Ontarians, and are of global significance. The challenges facing them are large, long-term and complex.

Building on Ontario’s existing policy framework, the proposed act, if passed, would provide new legal tools for action at different scales – from setting broad direction to support the long-term ecological health of the lakes, to enabling more immediate targeted action in priority areas under stress.

This approach recognizes the unique needs of different parts of the Great Lakes, builds on current regulations and the important work already underway, and allows actions to be phased in over time to coordinate resources and focus on shared priorities.

The proposed act provides new legal tools that the Ontario government could use to protect beaches, wetlands and other coastal areas of the Great Lakes that we enjoy and that provide habi-

tat for numerous plant, fish and wildlife species. A key intended outcome is to create more opportunities for individuals and communities to take action to keep the Great Lakes healthy and clean.

The proposed act, if passed, would be enabling. This means that it would create new authority to undertake actions and to make regulations, and the details of these actions would be determined in the future through engagement with stakeholders, Aboriginal communities and the public. Future actions would respond to local needs and opportunities for collaboration, as well as consideration of science and potential impacts.

What We Heard

Before introducing the proposed act, the Ontario government met with and heard from community leaders, stakeholders, First Nations and Métis leaders and others, and learned more about Great Lakes issues and what should be done to address them.

We heard that there is a need for better coordination of Great Lakes actions by all partners. We heard about the importance of setting priorities and targeting action to the areas around the lakes that are in greatest need. We heard about the need to target actions based on our understanding of the science, and about the need to monitor the effectiveness of our actions. We heard that when it comes to Great Lakes issues, there is no “one-size-fits-all” solution and that local communities want an active role in the future of their lakes. We also



Canoeing on Toronto's waterfront. (Ministry of the Environment, Gary and Joanie McGuffin)

heard about the need to reconnect people to the Great Lakes and provide more opportunities for them to be involved.

Key Elements of the Proposed Great Lakes Protection Act

The proposed act, if passed by the Ontario Legislature, would:

Set direction on Great Lakes

The purpose of the act would be to protect and restore the ecological health of the Great Lakes and St. Lawrence River Basin, and create opportunities for individuals and communities to become involved in its protection and restoration.

This would include protecting human health and well-being through the protection and restoration of Great Lakes ecological health. It would include protecting and restoring wetlands, beaches and other priority coastal areas, as well as natural habitats and the diversity of living things in the ecosystem.

The purpose would also address support for science on climate change and other environmental stresses. And it would address environ-

mentally sustainable economic opportunities and innovation, including sustainable use of Great Lakes natural resources.

Establish a Great Lakes Guardians' Council

The Council would be a forum for collaboration and coordination among Great Lakes partners, a place where they can discuss Great Lakes priorities for action and identify potential partnerships and sources of funding for projects. They could also share information, and discuss setting targets, developing local initiatives and inter-jurisdictional agreements.

Provincial ministries that have responsibilities related to the Great Lakes, municipal representatives, and First Nations and Métis representatives would be invited to participate in the Council.

The list of Great Lakes Ministers would include Ontario Ministers of: Environment; Natural Resources; Agriculture, Food and Rural Affairs; Municipal Affairs and Housing; Infrastructure; Aboriginal Affairs; Economic Development and Innovation; Tourism, Culture and Sport; Transportation; and Intergovernmental Affairs.

Other invited partners would include representatives of environmental groups, industry, farmers, the recreation and tourism sectors and the science community. Additional participants could also be invited, including a representative of the federal government.

The proposed act would also recognize that First Nations peoples of the Great Lakes and St. Lawrence River Basin maintain a spiritual and cultural relationship with water. The act would reaffirm that nothing in the act is to be construed so as to take away from the protection provided for existing Aboriginal and Treaty Rights as recognized under the constitution. The act would also recognize that First Nations communities that have a historic relationship with the Great Lakes and St. Lawrence River Basin may wish to contribute traditional ecological knowledge for the purpose of assisting in anything done under the Act. Traditional ecological knowledge is anchored in collective community wisdom based in ceremony, custom, culture and and conservation practices.

Identify Ontario's priorities for action in a Great Lakes Strategy

Another element of the proposed act would be the requirement that the Minister of the Environment, in consultation with other Great Lakes Ministers, communicate actions taken and the Province's Great Lakes priorities for future actions in an Ontario's Great Lakes Strategy. This Strategy (you are reading the initial draft) would serve to bring together the many provincial interests, tools and activities related to the Great Lakes.

The Strategy would be reviewed at least every nine years, keeping Ontario aligned with key

binational Great Lakes meetings and serving as our road map when working with our Great Lakes partners. Periodic public progress reports would outline actions taken and priorities for the future.

Build on existing tools by establishing clear direction-setting targets

The proposed act would provide the Minister of the Environment, in consultation with other Great Lakes Ministers, with the authority to set specific or general targets at various geographic scales – local, coastal, watershed or lakewide. Targets would be developed based on the best available science and through collaboration and consultation. The ability to set clear targets could help all partners work towards common restoration and protection outcomes. Setting targets would help Ontario to build on its efforts to manage the cumulative impacts of activities on the Great Lakes.

Examples of potential targets include:

- having beaches open more often for people to enjoy
- reducing phosphorus levels or loadings at a lake-wide or local scale to address nuisance or potentially toxic algae
- reducing harmful pollutants, for example, to address levels of a particular toxic chemical in a lake's water, sediment or fish, and
- promoting Great Lakes community involvement.

Take phased, targeted action by developing geographically-focused initiatives

The proposed act, if passed, would allow the Ontario government or other public bodies

(such as a municipality, conservation authority or other body) to develop and implement a plan to address priority issues in a specific geographic location. These geographically-focused initiatives would be developed through a collaborative process, building on existing work, and would include engagement with stakeholders, First Nations and Métis communities and the public.

Initiatives could address priority issues, such as excessive algae, protection of important Great Lakes habitats, or coordinated efforts to improve beaches. Initiatives would typically build on existing work. Initiatives would combine and align resources of various partners and coordinate efforts. Initiatives could employ watershed approaches to address cumulative impacts of harmful activities on the Great Lakes.

Initiatives would contain either legally enforceable policies or a proposal for a shoreline regulation, or both. They could also include policies that outline good-faith commitments. For example, if an initiative focused on protecting a coastal area, it could include buffers that protect the shoreline from significant alteration. It could also include a good-faith commitment by a public body or community group to plant trees and vegetation along the shoreline. In addition to a requirement for upfront consultation, any future initiative would require government approval at the proposal stage and at finalization.

Shorelines, where land meets water, are a unique and vulnerable part of the Great Lakes ecosystem. If passed, the proposed act would allow for future regulations on activities that

may harm the ecological health of the Great Lakes along areas of shoreline. A proposed future shoreline regulation could only apply within the specific area of a geographically-focused initiative, and, within that area, only in areas that are close to or adjacent to the

To learn more about the proposed Great Lakes Protection Act and to provide your comments, please see the proposal notice number 011-6425 posted on Ontario's environment registry (www.ebr.gov.on.ca) for 60 days of public review.

shorelines of the Great Lakes, St. Lawrence River, or another surface water body, a tributary or a wetland. A proposed shoreline regulation contemplated under the proposed act would be subject to upfront consultation under the Environmental Bill of Rights (a minimum 30-day public notice and comment period), and the regulation would be made by the Lieutenant Governor in Council. Such a regulation would also require careful assessment and consideration of options and impacts.

Continuing to Work Together

The Province will continue working with all of its partners and all those who depend on and enjoy the Great Lakes as we move forward in identifying opportunities to further the restoration and protection of the Great Lakes.

A Great Lakes Strategy for Action

Ontario's Draft Great Lakes Strategy contains a vision and Goals, and priorities for action to address these Goals.

The Vision

Ontario's vision is one of healthy Great Lakes for a stronger Ontario – Great Lakes that are drinkable, swimmable and fishable.

Proposed Great Lakes Goals

To achieve this vision, the Province is seeking to protect and restore the ecological health of

the Great Lakes and St. Lawrence River Basin. This Strategy addresses this vision and purpose through the Great Lakes Goals below.

The six sections that follow describe Ontario's priorities in the coming years to address each of these Great Lakes Goals. Ontario will use a variety of tools to take action – including existing laws and programs, actions under the proposed Great Lakes Protection Act if passed, Great Lakes agreements, and other partnerships and collaborations. The Strategy will guide our work with local partners and with other governments around the Great Lakes.

Great Lakes Goals:

Empowering communities	To create opportunities for individuals and communities to become involved in the protection and restoration of the ecological health of the Great Lakes and St. Lawrence River Basin
Protecting water	To protect human health and well-being through the protection and restoration of the ecological health of the Great Lakes and St. Lawrence River Basin
Improving wetlands, beaches and coastal areas	To protect and restore wetlands and beaches and other coastal areas of the Great Lakes and St. Lawrence River Basin
Protecting habitats and species	To protect and restore the natural habitats and biodiversity of the Great Lakes and St. Lawrence River Basin
Enhancing understanding and adaptation	To advance science relating to existing and emerging stressors, such as climate change, that improves understanding and management of the Great Lakes and St. Lawrence River Basin
Ensuring environmentally sustainable economic opportunities and innovation	To enrich the quality of life in communities in the Great Lakes and St. Lawrence River Basin through support of environmentally sustainable economic opportunities and innovation and through environmentally sustainable use of natural resources



A woman canoes near the Toronto Harbourfront. (Ontario Tourism Marketing Partnership Corporation, Goh Irimoto, 2011)

Ontario's Great Lakes Goals

1: Empowering Communities

One of Ontario's Great Lakes Goals is empowerment, through providing opportunities for Ontarians to help take care of the lakes.

Today, stresses and threats facing the Great Lakes are increasingly complex. Individuals, communities and governments can all play a role in protecting the Great Lakes from the

cumulative impacts of activities across the landscape. From conserving water and using non-toxic cleaners at home or work, to helping with a shoreline cleanup or a marsh-monitoring program, there are many ways for Ontarians to make a difference.

This Goal focuses on providing opportunities to enjoy, benefit from and connect with the Great Lakes. Great Lakes experiences are not only available in natural areas such as provincial parks, but also in our rural communities and our cities – along waterfronts and in urban forests and ravines. As Ontario continues to attract people from across Canada and around the world, these are opportunities to introduce new Ontarians to Great Lakes nature through recreation, cultural and heritage experiences.

Studies show that time outside in nature helps children in many ways beyond physical fitness – it can improve a child's ability to focus and concentrate, help the development of critical thinking and problem solving skills, and can be effective as therapy for attention deficit disorders and depression. Adults' physical and mental health can also benefit from time spent enjoying nature.

Ontario's Strategy includes providing opportunities for communities to take action, strengthening public engagement, and improving governance. Another priority is collaboration between the Ontario government and First Nation and Métis leadership and communities – both on broad Great Lakes values and policy direction, and on specific local Great Lakes protection actions.

Individuals and communities can play a part on the Great Lakes by collaborating on setting

direction, and by contributing to action. The empowerment Goal can help to achieve each of the other Goals of this Strategy – protecting water, improving beaches, conserving biodiversity and more.

Proposed focus for future Ontario action

Local community action program

a) Developing a program that could help fund small-scale local community actions to restore and protect the Great Lakes. The program could provide direct assistance to community groups and other local organizations as well as First Nations and Métis communities to undertake numerous small-scale projects that:

- advance the restoration and protection of the Great Lakes through activities like shoreline and beach clean-ups and watershed improvements
- help people re-connect and enjoy the Great Lakes through local initiatives such as promoting and developing coastal and riverside trails and participating in wetland protection and restoration, and
- raise awareness or promote individual stewardship practices that help protect and restore the Great Lakes.

Ontario hopes to have the program underway by fall 2012, and to support hundreds of successful local projects over the next several years.

Actions under the proposed Great Lakes Protection Act, if passed

b) Involving local communities in helping set priorities to address local Great Lakes



Taking in a bit of local history at Awenda Provincial Park, Georgian Bay. (Government of Ontario, Vlade Shestakov, 2011)

concerns through geographically-focused initiatives, and

c) Establishing a Great Lakes Guardians' Council that would bring together provincial ministries and representatives from First Nations, Métis, municipal and other partners (environmental, science, industry, agricultural, recreation and tourism representatives, and possibly other partners such as a federal representative) with an interest in the Great Lakes, as a forum to discuss priorities and help align efforts.



An Ontario Parks staff member helps children investigate a marsh at Presqu'ile Provincial Park. (Ministry of Natural Resources, David Bree, 2008)



Paddling a voyageur canoe on the Kaministiquia River, Lake Superior. (Government of Ontario)

Other future actions would include:

- d) Creating more opportunities for Ontarians, young and old, to experience the Great Lakes, and to build a sense of connection with the ecosystem and with Great Lakes history and culture – an important first step in building awareness, including:
 - connecting teachers and school boards with opportunities to use the Great Lakes as a context for teaching and learning, and
 - encouraging families to take part in natural heritage education programs offered by Ontario's provincial parks and other groups.
- e) Continuing to build relationships with First Nations and Métis communities by providing opportunities to collaborate on plans and priorities, and also through actions on projects to help protect and restore the Great Lakes.
- f) Continuing to partner with Great Lakes municipalities on shared Great Lakes priorities, including ongoing collaboration with the Great Lakes and St Lawrence Cities Initiative and other groups.
- g) Continuing to partner with conservation groups and others on projects to protect the Great Lakes.
- h) Working with the federal government by:
 - seeking to establish a new Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA), and
 - working to implement any new COA – the new COA should help to coordinate actions of federal, provincial and local partners on the restoration and protection of the Great Lakes – helping to deliver Ontario's priorities in this Strategy.
- i) Continuing to partner with U.S. Great Lakes jurisdictions on binational lake plans, water quantity management, fisheries management, invasive species prevention and other shared interests.
- j) Continuing to take a collaborative, locally-engaged approach to the protection of drinking water sources under the Clean Water Act.

2: Protecting Water

Many Ontario actions help address the Great Lakes Goal of ecosystem restoration to protect human health and well-being. A key priority under this Strategy is protecting the quality and quantity of Great Lakes water.

Ontario works to protect and conserve the interconnected system of watersheds and groundwater in the basin, and the variety of life those waters support from the cumulative impacts of threats such as climate change, growing water use and large-volume water diversions. Ontario also works to significantly reduce and, where possible, end the discharge of harmful pollutants into the water, air and land of the Great Lakes ecosystem. Ongoing collaboration across borders is also essential to protect shared Great Lakes waters from threats to water quality and quantity.

Algae problems in the Great Lakes are fed by phosphorus. The International Joint Commission has identified non-point pollution from urban and agricultural watersheds as key sources of the excessive phosphorus loadings into Great Lakes nearshore waters.⁷ Phosphorus reaches the Great Lakes both from urban sources (including stormwater, sewage and industrial sources), and from rural sources (including agricultural activities). Reducing excess phosphorus is an essential element for improving Great Lakes water quality.

As Ontario's population continues to grow, there is a need to continually improve our



Children play at Petticoat Creek Conservation Area, Lake Ontario, Pickering. (Ontario Tourism Marketing Partnership Corporation, Kas Stone, 2010)

Showcasing Water Innovation

The program includes provincial funding for stormwater innovation work. For example, on Lake Ontario, the Credit Valley Conservation Authority is receiving provincial funds to collaborate with public and private sector partners on projects that encourage low impact development approaches to managing stormwater and conserving water. The conservation authority is installing and testing green infrastructure to better understand how it performs, and producing green infrastructure guides that municipalities can use for their projects.

⁷ International Joint Commission. 15th Biennial Report. 2011.

sewage treatment and stormwater management. A changing climate may make storms and runoff worse – another reason to focus on managing stormwater to reduce pollution and erosion. There are opportunities to improve stormwater approaches, such as “green infrastructure” including constructed wetlands.

Protecting drinking water, from source to tap, continues to be central to Ontario’s water protection programs – including a watershed-based approach to protect drinking water sources. Source protection committees across the province have assessed the risks to their drinking water supplies and are drafting source protection plans. The new watershed science developed to support drinking water source protection planning will also support other water protection programs.

Ontario has begun to address cumulative impacts through watershed approaches which could be used as a model for the Great Lakes. The Lake Simcoe watershed has some common challenges to those faced in the Great Lakes including excessive nutrients, pollutants, invasive species and increasing pressures from human activities and a changing climate. The Lake Simcoe model combines voluntary stewardship, education and community engagement actions with regulatory approaches to help address the harmful and cumulative impacts of phosphorus inputs from a variety of sources, with the ultimate goal of reducing them over the long term.

Ontario’s Great Lakes Strategy advances a number of priorities for water protection, to help keep the Great Lakes drinkable, swimmable and fishable.

Showcasing Water Innovation

In the St. Lawrence River watershed, Ontario is funding the Municipality of North Grenville to pilot test a new treatment process for municipal wastewater that could help reduce the amount of phosphorus entering the Rideau River while saving money for the municipality.

Proposed focus for future Ontario action

Actions under the proposed Great Lakes Protection Act, if passed

- a) Using new tools provided under the proposed act to deal with Great Lakes water protection issues that may arise, including:
 - allowing for targets to be set to deal with a specific water protection issue. For example, a target might address reducing phosphorus in a specific area from various sources, and
 - empowering focused action in a particular geographic area to address water protection – such as algae problems and phosphorus levels along a stretch of coastline, or bacteria getting into the water that is affecting a beach.

Other future actions:

Strengthening municipal water, wastewater and stormwater management

- b) Collaborating with municipalities, conservation authorities and others to support effective implementation of source protection plans under the Clean Water Act. Discussing with stakeholders whether continuous improvement of those plans could support better protection of the Great Lakes as sources of drinking water.
- c) Assisting municipalities and others in reducing impacts of stormwater, including:

- further supporting stormwater innovation demonstration projects and communicating the results of water innovation pilots to a broad audience
- developing guidance and standardized approvals to facilitate and remove barriers to the uptake of innovative source control measures that reduce stormwater volumes, such as green infrastructure and low impact development
- enhancing the Province's approach to stormwater approvals with greater emphasis on effluent quality and quantity, in turn driving greater use of innovative source control measures
- seeking environmental considerations such as use of low impact development early in municipal planning decisions, so that stormwater is considered as part of project design and approvals, not after the fact, and
- consulting on the development of overarching stormwater policy that supports the Canadian Council of Ministers of the Environment wastewater strategy.

d) Continuing to work with municipalities to minimize discharges of untreated sewage (such as overflows of combined sewers, and sewage bypassing a treatment plant) through:

- improving tracking of sewage overflows and bypasses, and continuing to monitor incidents and municipal work to minimize untreated sewage discharges
- encouraging municipalities to complete Pollution Prevention Control Plans and to make progress on reducing overflow and bypass volumes, and



A bioretention area reduces pollution from parking lot stormwater at the Earth Rangers Centre in Vaughan. (Toronto and Region Conservation Authority)

- promoting stormwater and green infrastructure approaches described above.

e) Working towards meeting Canadian Council of Ministers of the Environment commitments to a Canada-wide strategy for managing municipal and communal wastewater, including:

- consulting with municipalities, water utilities, the wastewater treatment industry, environmental groups, and the public on development of necessary updates to poli

Showcasing Water Innovation

Ontario is supporting projects to help improve stormwater management. For example, a Toronto and Region Conservation Authority project is evaluating sustainable stormwater projects in new commercial and residential developments, with the goal of improving the water entering Lake Ontario and demonstrating how other urban communities can adopt these technologies.



Installing an Environmental Farm Plan sign to show commitments underway. (Ministry of Agriculture, Food and Rural Affairs)

cies and approaches that support implementation of federal standards, and

- providing a one-window approach for municipalities to improve consistency with minimum standards set out in the proposed federal regulation on wastewater effluent standards for organic matter, chlorine, ammonia toxicity and sewer overflow/bypasses, including monitoring and reporting and building expertise among wastewater operators.
- f) Consulting broadly with municipal, water sector and community stakeholders on a Municipal Water Sustainability Plan Regulation under the Water Opportunities Act to:
 - promote consistency in the sustainability planning process for water services (including drinking water, wastewater and stormwater), and
 - promote consistency in development, measurement and reporting of performance indicators.

Managing rural non-point sources of nutrients

- g) Improving understanding of the effectiveness of agricultural stewardship programs and practices and enhancing adoption of effective practices
- h) Seeking opportunities to reduce nutrient inputs to the environment and improving monitoring of performance from the agricultural sector in priority geographic areas including:
 - review of the related acts and regulations for opportunities to promote environmental stewardship, water quality protection, innovation, green infrastructure, and water and nutrient recycling, and
 - development of community partnerships to encourage the uptake of effective agricultural best management practices.
- i) Evaluating the potential of using water quality trading in priority areas, where economically and ecologically feasible and acceptable to community partners.

Improving water quantity management

- j) Fulfilling Ontario's commitments under the Great Lakes and St. Lawrence River Basin Sustainable Water Resources Agreement. This could include:
 - finalizing broad water conservation goals and objectives, which were consulted on in the past
 - consulting broadly on a potential approach to manage large-volume transfers of water between one Great Lakes watershed and another, and
 - continuing to improve the way Ontario manages water takings under the Permit



A vineyard's drip irrigation system. (Ministry of Agriculture, Food and Rural Affairs)

to Take Water program, for example, by incorporating the Agreement's criteria related to consumptive uses of water.

k) Considering Ontario's approach to managing the cumulative impact of water takings in stressed watersheds in light of the new water quantity science produced by source protection committees under the Clean Water Act, and consulting broadly on any potential changes.

l) Promoting water conservation and efficiency as enabled under the Water Opportunities and Water Conservation Act, including:

- establishing aspirational targets for water conservation
- further promoting WaterSense labelling for water-efficient consumer products, and

- developing and consulting with stakeholders on potential water conservation plans by public agencies (e.g., municipalities, universities, colleges, schools and hospitals).

m) Reviewing the current charge for industrial and commercial water takings and discussing with stakeholders potential changes to the charge framework.

Protecting water quality

n) Supporting opportunities for local groups to take action on water protection projects.

o) Continuing to collaborate with Canada on Great Lakes water quality protection, including:

- the identification of joint priorities for harmful pollutants
- joint work to reduce excess algae and the nutrients that feed them
- developing a nearshore framework to address cumulative impacts to coastal waters, and



- filling gaps not addressed through the revised binational commitments for Great Lakes water quality.
- p) Continuing to update water and air pollution regulations and standards as needed to protect the health of people and the Great Lakes environment.
- q) Continuing ongoing work to ensure compliance with water-related regulations and to improve spill prevention and response.

Ontario is also continuing to promote water innovation – see p. 55.

3: Improving Wetlands, Beaches and Coastal Areas

One of Ontario’s Great Lakes Goals is to restore and protect wetlands, beaches and other coastal areas of the Great Lakes and St. Lawrence River.

Wetlands, beaches, waterfronts and other coastal areas are where people meet the lakes, but also where pressures on the lakes are most

Showcasing Water Innovation projects that help protect the Great Lakes include:

On Lake Erie, Ontario is providing water innovation funding to the Grand River Conservation Authority for projects that will help ensure sustainable water supplies, reduce flood damage, and improve water quality to maintain ecological health. This work will reduce the Grand River’s impact on Lake Erie, and make the Grand more resilient to the impacts of climate change.

The Province is also funding work by the Upper Thames River Conservation Authority to understand climate change impacts on water quality and flooding. The project includes helping rural landowners find approaches that reduce nutrient discharges into the Thames River and the Lake Erie watershed.

On Lake Huron, provincial funding to the Ausable Bayfield Conservation Authority will develop an innovative rural stormwater management model and test it in five high priority watersheds along the southeast shore of Lake Huron.

evident, in the form of unwanted algae, contaminated sediment, shoreline alterations and other impairments caused by human activity. Nearshore areas are the most biologically diverse and productive areas in the lakes – restoring and protecting them will have lake-wide benefits, for example by providing spawning habitat and reducing contaminant levels in Great Lakes fish.

The declining health of nearshore waters now has binational attention. It is a focus for Ontario communities and the Ontario government, as well as for the federal government and our neighbours to the south.

Ontario has many partnerships that help to protect our Great Lakes coasts and nearshore waters including work to reduce phosphorus, restore coastal wetlands, protect drinking water intakes and clean up contaminated sediment. For example, collaborative action in Great Lakes Areas of Concern is helping to clean up historic contamination at harbours, waterfronts and communities along the Great Lakes. In these communities, partners work together to set clear goals and take action to restore the use and enjoyment of Great Lakes resources.

Great Lakes coastal wetlands are important areas for a number of reasons. They provide habitat for a large number of plant, fish and wildlife species. They help reduce flood damage and erosion, and improve water quality by absorbing sediments and excess nutrients. They are essential to surface and groundwater recharge, and are popular places for recreation and tourism.

Beaches are also important focal points for Great Lakes action. Ontario has nearly three



On the beach during Port Dover's Fish fest, on Lake Erie. (Ontario Tourism Marketing Partnership Corporation)

hundred public beaches along our Great Lakes coast. Many of these are signature tourist attractions such as Wasaga Beach, Grand Bend and Sauble Beach, which provide recreation and are the economic lifeblood of local communities. Ontario's provincial parks system also has many beautiful beaches such as Sandbanks, Awenda, The Pinery and Pancake Bay. Recently some municipalities and local partners have met international eco-certification standards so their Great Lakes beach can be recognized as a "Blue Flag" beach.

There are opportunities to build on existing planning frameworks such as the Provincial Policy Statement, source protection plans, watershed plans by conservation authorities, and binational lake plans and strategies, to advance needed Great Lakes action in priority areas. Provincial plans for some sensitive ecosystems within the Great Lakes Basin, such as the Greenbelt, Lake Simcoe and the Oak Ridges Moraine, include elements that may be important for future work. For example, some of these plans include goals, targets, wetland and shoreline protections, clear governance and engagement processes, and public reporting.



Coopers Marsh, near Cornwall, following rehabilitation. (Raisin Region Conservation Authority)

The flexibility of the proposed Great Lakes Protection Act would respond to the need to focus action and target different issues in different ways, in different parts of the Great Lakes.

Under the proposed Great Lakes Protection Act, Ontario could work with partners to focus action on priority geographic areas. Where existing programs, partnerships and science are pointing to a need and opportunity for action, the Minister of the Environment could establish a Great Lakes target under the proposed act and work with local partners for a Great Lakes initiative. This would support alignment and collaboration of actions in a defined coastal area or watershed.

The focus on beaches and waterfronts in this Strategy also includes opportunities to promote the use and enjoyment of Great Lakes beaches, festivals, and other coastal features and events.

Proposed focus for future Ontario action

Action under the proposed Great Lakes Protection Act, if passed

a) Launching discussions on establishing the first geographically-focussed initiatives enabled by the proposed act. The Minister of the Environment would work with

local partners and discuss opportunities to develop initiatives over time around priorities in each of Ontario's Great Lakes. These Initiatives could build on work already underway through binational lake plans and other collaborative projects.

Other future actions would involve:

Beaches

- b) Exploring opportunities to enhance adoption of the internationally recognized Blue Flag beach certification program at Great Lakes beaches.
- c) Working with partners, through small local projects, on opportunities to connect with Great Lakes coasts through dune restoration, beach education and other stewardship and education programs.
- d) Continuing to work with public health units to improve the way safety of beach water is monitored and assessed, potentially leading to more Great Lakes beaches being available to enjoy during more of the swimming season.
- e) Working with partners to support making information on beaches more available.
- f) Working with partners to enhance the sharing of successful and innovative approaches on beaches, wetlands and coasts.

Wetlands

- g) During review of the Provincial Policy Statement, reviewing land use, water resource and natural heritage provisions to support Great Lakes protection – for example, pursuing stronger protection for coastal wetlands and other natural features that are important to the health of the Great Lakes ecosystem.



A walk along the beach at Darlington Provincial Park, Lake Ontario. (Ontario Parks)

- h) Continuing to support strategic partnerships and collaborations that conserve and restore wetlands across the Great Lakes Basin, such as the Eastern Habitat Joint Venture.
- i) Conducting new and updated wetland evaluations and providing support to aid municipal planning.
- j) Investigating opportunities to make use of wetland rapid evaluation tools to help support identification of provincially significant wetlands.
- k) Continuing to update wetland data and mapping available through Land Information Ontario.
- l) Conducting workshops to profile wetland conservation successes, discuss challenges and identify future directions.
- m) Developing tools to encourage municipal engagement in wetland conservation.

Other priority coastal areas

- n) Working with federal, municipal, First Nation, Métis and other partners on the development of a framework for the assessment and protection of Great Lakes nearshore waters. This includes seeking provisions in a new Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) to advance Great Lakes coastal protection and restoration.
- o) Promoting sustainable coastal recreation and tourism developments (e.g., parklands, beaches and trails) and activities associated with the lakes and their waterfronts and coasts.
- p) Continuing to consider opportunities for growing the Greenbelt and assessing potential for enhancing provisions of the Greenbelt Plan to support Great Lakes protection during the scheduled review in 2015.



Caspian Terns on the Lake Ontario shoreline. (Ministry of Natural Resources)

- q) Addressing key challenges in Areas of Concern, such as non-point source pollution, contaminated sediment, and municipal wastewater, through Ontario actions and collaboration with federal and local partners. Depending on resources available, Ontario is poised to work with federal agencies and local participants to complete actions and/or achieve clean-up at a number of Areas of Concern which might include Nipigon Bay, Peninsula Harbour, Detroit River, Niagara River, Bay of Quinte and St. Lawrence River (Cornwall).
- r) Representing Ontario's interests in binational efforts to manage, evaluate and improve regulation of Great Lakes water levels and flows – efforts that further consider coastal and shoreline environments, natural physical features and processes in shoreline management, among other interests.

4: Protecting Habitats and Species

Ontario's Great Lakes Goal is to restore and protect the natural habitats, biodiversity and resilience of the Great Lakes and St. Lawrence River Basin ecosystem.

Biodiversity is the variety of life on earth and for the Great Lakes Basin this includes thousands of wetlands, unique ecosystems, more than 150 native fish species, and thousands of native plants. Some of these species are found nowhere else in the world. *The State of Ontario's Biodiversity 2010* report recognizes habitat loss and invasive species as two of the main threats to biodiversity. Another concern is loss of connectivity of natural systems.

Habitat

Aquatic habitats in the Great Lakes range from deep offshore areas of the lakes to coastal wetlands to the headwaters of tributary streams.

Terrestrial habitats range from the Carolinian



The endangered American eel is an important part of Lake Ontario's biodiversity. (Ministry of Natural Resources)

forest bordering the lakes in parts of southern Ontario to the boreal forest along the north shore of Lake Superior. Interspersed are Great Lakes islands, cobble beaches, dune systems, alvars⁸ and tallgrass prairies, all of which provide important habitats for many species. Many habitats have been lost or altered due to urban, rural and industrial development. Coastal wetlands, nearshore areas and tributary systems in southern Ontario have been particularly affected.

Invasive Species

Invasive species are harmful alien (non-native) species whose introduction or spread threatens the environment, the economy, or society, including human health. Great Lakes invaders include: molluscs such as quagga and zebra mussels (see “coastal health and

In the spring of 2011, the Ontario government released the draft *Ontario Invasive Species Strategic Plan*. Many of the proposed actions will require delivery through a partnership approach.

Key mechanisms for delivery include a new Invasive Species Centre and the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA).

the nearshore shunt”, p. 7); several species of fish, including round goby and sea lamprey; crustaceans such as the rusty crayfish and the spiny water flea; and a number of aquatic plant species, including Eurasian water milfoil and Phragmites.

Compared to other regions in Canada, Ontario has the highest risk for new invasive species. A major international shipping channel, the Great Lakes and St. Lawrence Seaway, affords direct access from the Atlantic Ocean, linking far-away ports with those of Ontario’s Great Lakes coast.

Asian Carp

Ontario has developed a coordinated plan for quick action to seek to prevent Asian carp from spreading if they are found in Ontario’s Great Lakes waters.

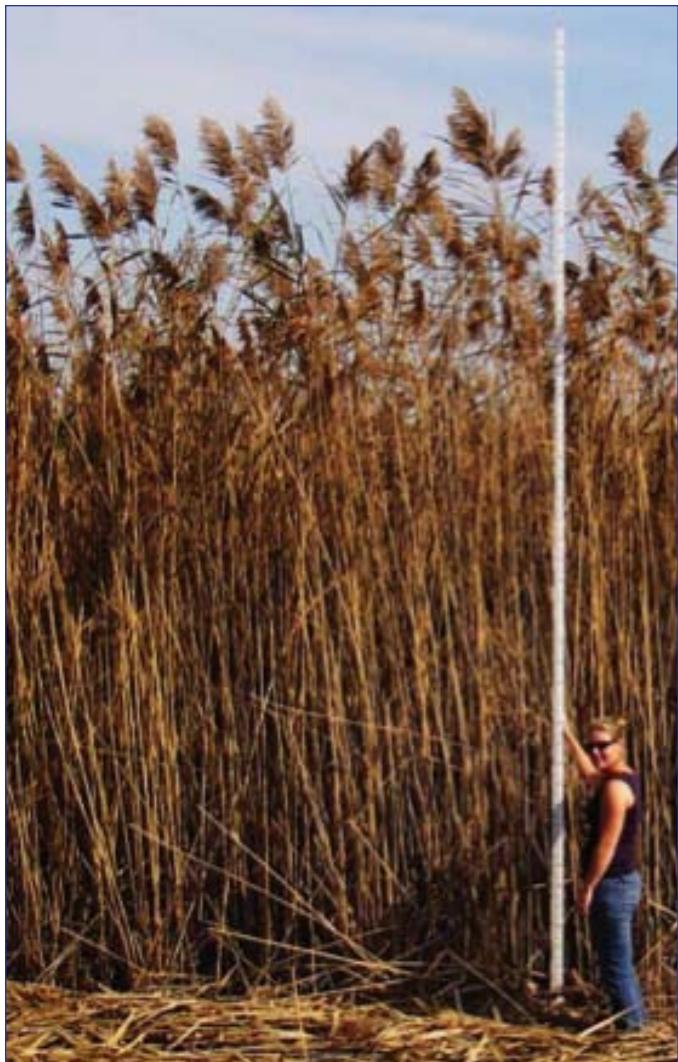
It is illegal to possess live Asian carp in Ontario. The Province’s conservation officers work cooperatively with the Canada Border Services Agency to prevent illegal imports.

As of spring 2012, charges for possession of live Asian carp have resulted in fines of up to \$60,000.

Invasive Species Centre

In 2011, the federal government and the Ontario Ministry of Natural Resources agreed to coordinate their efforts to deal with invasive species. A key mechanism for this coordination is the Invasive Species Centre, a not-for-profit entity established in Sault Ste. Marie by Ontario and Canada. The role of this Centre is to support coordination, collaboration and action on invasive species issues, so available resources can be used in the most effective and efficient manner. (www.invasivespeciescentre.ca)

⁸ An alvar is a sparsely-vegetated limestone plain. For their size, alvars are rich with species. They support a distinctive community of native plant and animal species, many of which are rare globally.



Measuring invasive Phragmites. (Ministry of Natural Resources, Dr. J.M. Gilbert)

As of 2009, there were 186 non-native aquatic species in the Great Lakes Basin. Historically, the Seaway has been a major route for invasive species, though today concern is focused as well on artificial waterways linking to the Mississippi Basin and on other potential invasion routes. Invasive species move into Great Lakes ecosystems mainly through human activity, whether intentional (such as deliberately planting invasive plants) or unintentional (for example, species carried in the ballast water of ocean-going ships or on the bottoms of recreational boats). Over the last decade, the rate of invasions has

declined, possibly as a result of new federal ballast water regulations and inspections. Along the shoreline, increasing urban development has caused widespread disturbance of natural habitats, making those regions particularly vulnerable to species invasions.

Invasive Asian carp are now widespread in the Mississippi and Illinois River systems, and pose a major threat to the Great Lakes because of their prolific reproduction and voracious appetites.

Ontario and our Great Lakes partners know from experience that it is far less costly to prevent an invasion before it happens. Ontario closely monitors U.S. actions to keep Asian carp out of the Great Lakes, and supported Michigan's 2009 motion to the U.S. Supreme Court to close the Chicago canal that is the primary pathway for a potential carp invasion.

In 2011, Ontario developed an Asian carp response plan, with support from Fisheries and Oceans Canada, which outlines roles and responsibilities for action. Ontario also hosted simulation exercises with agency partners to test our preparedness in the event of Asian carp being detected in Ontario waters. Ontario works with commercial and recreational anglers as well as with federal and binational bodies to prepare to respond to a potential invasion.

If you find an invasive species on your property or in your community, please report it by calling the Invading Species Hotline at 1-800-563-7711.

Your information will help us prevent the spread of invasive species in Ontario.



Ontario Ministry of Natural Resources conservation officer seizes Bighead Carp at the Canada/U.S. border. (Ministry of Natural Resources)

Ontario's Great Lakes Strategy will continue to support biodiversity protection, restoration and conservation, and to address invasive species. We will seek to fill key gaps and pursue opportunities under this Goal.

Proposed focus for future Ontario action

Protecting habitats and species

- a) Pursuing opportunities to improve habitat protection and restoration methods to help decrease loss, degradation and fragmentation of Great Lakes Basin natural areas and landscapes that provide habitat for species and valuable ecosystem services.
- b) Completing binational biodiversity conservation plans for Lakes Erie and Superior, and working to implement the binational biodiversity conservation plans for each of the Great Lakes and their connecting rivers, to ensure that priorities are identified and acted upon.
- c) Continuing provincial collaboration with the Government of Canada and many local

partners to support the establishment of the Lake Superior National Marine Conservation Area, the world's largest freshwater marine protected area. This park will protect natural heritage such as bird habitats and species at risk, as well as cultural heritage such as Aboriginal archaeological sites, lighthouses and shipwrecks.

- d) Seeking ongoing opportunities for the continued rehabilitation and maintenance of native Great Lakes species, communities and ecosystems.
- e) Assessing the status and improving our understanding of factors affecting the health of aquatic ecosystems, habitats, native species and food webs, including nearshore areas, to help to guide conservation efforts.
- f) Enhancing the conservation of Great Lakes biodiversity through increased public awareness of its value and its contributions to Ontario's social, economic and environmental well-being.

Addressing invasive species in the Great Lakes Basin

A key action of the renewed *Ontario's Biodiversity Strategy 2011* is to, "continue and enhance measures for prevention of, early detection of, rapid response to, and effective management of invasive species."

Ontario will implement the *Ontario Invasive Species Strategic Plan*, once finalized. It is expected to focus on the following priority actions for managing invasive species in the Great Lakes.



The “Great Lakes Guardian”, used for research and monitoring in Great Lakes nearshore waters. (Ministry of the Environment)

Prevent new invaders:

- g) Working with governments to review and address gaps in laws governing invasive species in trade – live plants and animals that are sold for personal or commercial use, for example for use in aquariums, as live bait, in horticulture and water gardening, or as food fish.
- h) Applying risk assessment tools to live plants and animals that are sold for personal or commercial use. This action will require continued collaboration with industry, governments, and academia, because our knowledge of these pathways is incomplete and additional research is required.
- i) Enhancing existing coordination of invasive species research across the Great Lakes Basin and developing common research priorities. This action will require continued collaboration with existing forums such as the Canada/Ontario Invasive Species Centre, Canadian Aquatic Invasive Species Network, and Great Lakes Fishery Commission.
- j) Continuing collaborative efforts on education and outreach to address gaps and

improve communications regarding high risk pathways and to engage a wider range of interest groups.

Detect invaders that have entered Ontario

- k) Working with partners to develop and implement scientifically defensible surveillance activities in geographic areas at high risk of invasive species introductions.

Respond rapidly to new invasions

- l) Developing a rapid response framework that will assist Ontario in responding to new invaders.

Manage and adapt to the presence of invaders that have become established:

- m) Where invasive species are established and eradication is not feasible, developing mitigation and adaptation measures, including guidance to partners and the public through fact sheets and best management practices.

5: Enhancing Understanding and Adaptation

Ontario's Goal is to support science that improves the understanding and management of the Great Lakes and St. Lawrence River.

Sound science is the foundation for achieving each of the other Goals of Ontario's Great Lakes Strategy. Science is essential to target and prioritize actions to protect and restore the Great Lakes ecosystem. Great Lakes protection is a long-term challenge, so monitoring programs are also key to assessing progress, evaluating the effectiveness of policies, programs and partnerships, and adapting them as necessary over time.

Ontario works with other jurisdictions and partners to research the Great Lakes ecosystem and develop the knowledge to aid in decisions. Our science programs are highly collaborative, relying on partnerships to advance the knowledge we need for Great Lakes action. For example, conservation authorities work with the Province in monitoring Great Lakes tributaries across Ontario. Ontario also has many joint projects with Great Lakes researchers at Ontario universities, and partnerships with scientists in other jurisdictions around the Great Lakes Basin and beyond.

Over the past decades, we and our partners have made progress in Great Lakes science. However, the vastness of the Great Lakes and the stresses and threats they now face go beyond the capacity of current research to keep pace. Over time, we will need to con-



Monitoring and assessing Bay of Quinte region fish populations.
(Ministry of Natural Resources)

tinue to make targeted investments in Great Lakes science to understand the ecosystem, identify issues, solve problems, and help set priorities. Our scientists must also explore new and innovative ways of obtaining, analyzing and communicating the most current information.

Science on the Great Lakes must also consider past, present and future stresses and their cumulative impacts. For example, we will continue to build our understanding of climate change. We will assess its impacts on the Great Lakes and design Ontario programs and infrastructure that actively take these impacts into account to help communities adapt – and to protect the lakes' natural resilience. Action on Great Lakes climate change impacts is a priority under the Great Lakes Strategy.

Many First Nations and Métis communities have an interest in the use of traditional ecological knowledge alongside western science to form part of the understanding of ecosystem change in the Great Lakes.



Odorous mats of algae fouling the Lake Erie shoreline in 2006.
(Ministry of the Environment)

Proposed focus for future Ontario action

Delivering needed science

- a) Continually assessing and adapting Ontario's Great Lakes science priorities by optimizing research investments and through partnerships, and by sustaining long-term monitoring capabilities.
- b) Continuing to undertake collaborative science, and enhancing integration of different types of knowledge including traditional knowledge, socio-economic research, Great Lakes environmental and ecological monitoring and research, and drinking water source protection science into decision making.
- c) Making the best use of our significant investment in watershed science for drinking water source protection plans under the Clean Water Act, to support other Great Lakes-related programs.
- d) Improving understanding of the sources and pathways of non-point source pollution to ensure management practices and resources are focused appropriately.
- e) Undertaking priority collaborative science so that management of fisheries and
- f) Continuing to implement research and monitoring programs to understand Great Lakes ecosystem function, structure and change. For example, to address coastal water quality and algae, science resources as available will focus on assessing nutrient-algae relationships altered by invasive species impacts, collaboratively identifying priority watersheds, developing new near-shore and tributary water quality targets, and quantifying impacts of land uses and beneficial management practices.
- g) Improving understanding of the relationships between groundwater and surface water, and the role of groundwater in sustaining Great Lakes water levels and tributary water flows.
- h) Continuing to harness new technologies and approaches such as advanced sampling equipment, remote sensing and modelling, as resources are available.
- i) Sustaining partnerships, data sharing, and other opportunities to help enhance science knowledge and capacity at conservation authorities, Ontario's universities, and among other Great Lakes research and protection partners. For example, collaborating on science that addresses barriers to using green infrastructure for stormwater management, such as development of design standards that are appropriate for Ontario soil conditions.

other natural resources, and biodiversity conservation work, can adapt to changing conditions.

Sharing and communicating science

- j) Sustaining, and where possible, improving the management, analysis and communication of Ontario's Great Lakes information and data. This includes sharing our information broadly, providing useful and timely knowledge to support action, and improving Great Lakes reporting.
- k) Supporting Great Lakes experts in sharing their results at key conferences, through publications and other communication opportunities.

Climate change impacts and adaptation

- l) Continuing to implement adaptation actions under *Climate Ready*, including:
 - building climate adaptation into Great Lakes agreements and integrating climate change adaptation into Ontario's Great Lakes programs
 - examining climate change impacts on Great Lakes fisheries
 - improving existing monitoring networks to detect climate change, and
 - continuing to build our understanding of climate change and its impacts on the Great Lakes through investments in climate modelling and the development of rainfall intensity, duration and frequency curves.
- m) Developing a model adaptation plan for a Great Lakes community, to consider local climate science information and then develop adaptive management actions. This project will be communicated as a potential model for other Great Lakes communities.



Biologists inventory a Parry Sound coastal wetland from a canoe. (Ministry of Natural Resources)

- n) Considering undertaking a pilot infrastructure vulnerability assessment of the impacts of climate change on a municipal water treatment plant in southern Ontario in partnership with the engineering sector, municipal sector and others.
- o) Ensuring climate science information, including regional climate modeling data related to the Great Lakes Basin, is available to decision makers in Great Lakes communities to support planning.
- p) Undertaking an economic study to identify and quantify the economic impacts (challenges and opportunities) of climate change

on key beneficial uses of the Great Lakes. The study will also quantify cost savings available through select adaptation actions.

- q) Conducting and supporting research to better predict the effects of climate change on new invasions and the spread of already established species.
- r) Working with partners on strategies that facilitate information sharing, collaboration, and adaptive management to further mitigate water level-related impacts along our Great Lakes shorelines.

6: Ensuring Environmentally Sustainable Economic Opportunities and Innovation

Ontario's Great Lakes Goal is to enrich quality of life in Great Lakes and St. Lawrence River watershed communities through environmentally sustainable economic opportunities, innovation and use of natural resources.

The Great Lakes and St. Lawrence River are the foundation of Ontario's economy and quality of life. Great Lakes and St Lawrence River watersheds are Ontario's bread basket, and their waters are Ontario's most important drinking water source. This ecosystem

Innovation in Water Treatment

In June 2010, the Walkerton Clean Water Centre opened its state-of-the-art learning centre that includes a new technology demonstration facility. This facility is focused on demonstrating the application of leading-edge treatment and distribution solutions and for dealing with water quality issues, particularly for small and rural drinking water systems.

The facility has a laboratory space as well as a drinking water pilot plant and distribution system. This provides a practical hands-on training tool, allows research, testing and evaluation of new technologies, and serves as a resource to help water facility operators, stakeholders and the public become aware of the variety of treatment and delivery systems and technologies available.



Resolute Forest Products Mill on the Kaministiquia River in the Thunder Bay AOC. (Darren McChristie)

also provides power generation, economic opportunities for industry and agriculture, key shipping routes and transportation links, and extensive recreational opportunities. Manufacturers including food processors rely on clean Great Lakes waters.

To achieve this Great Lakes Goal, Ontario has three priorities for action.

- One priority is to support and foster water technology innovation services and practices. Ontario recognizes that protecting the Great Lakes is an opportunity for numerous sectors of the economy. Water technology innovation and conservation practices can provide economic sectors with tools to improve the environmental sustainability of their activities, and at the same time help Ontario companies tap into the \$400 billion a year and growing global watertech market. Technology innovations and practices may address outcomes such as water conservation and efficiency, nutrient recycling and water quality protection.

Through the Water Opportunities Act and related initiatives, Ontario is taking a broader view of water usage, and drawing connections between improvements in the management

and quality of our water resources, and the promotion of innovative technologies and solutions from Ontario companies to address these issues. These two approaches, promoting responsible management of Ontario's water resources and supporting commercialization of innovative approaches, are inter-related and will provide significant benefits to Ontario's economy.

- Another priority is to encourage sustainable Great Lakes tourism and recreation. From iconic, premier attractions such as Niagara Falls, to growing tourism and recreation niches such as bike trails and wineries, there are many opportunities to further harness the economic potential and quality of

Showcasing Water Innovation

Ontario is supporting an Ontario Greenhouse Alliance project to help move the greenhouse industry toward recycling 100 per cent of the nutrient-bearing water its members discharge, which would improve water efficiency, competitiveness, and the quality of local water bodies.



Red Rock Marina in the Thunder Bay Area of Concern. (Darren McChristie)

life benefits along the Great Lakes and St. Lawrence River. Great Lakes trails, natural areas, nature tours, cruising, heritage coastline, beaches, fishing and other activities present unique experiences that Ontarians and visitors can enjoy.

- Ensuring that resource use and economic development are environmentally sustainable is also a Great Lakes priority. Many of Ontario's economic sectors rely on the Great Lakes and have an impact on the ecosystem. There are opportunities to promote innovative approaches that improve both environmental and economic outcomes for businesses.

Proposed focus for future Ontario action

Supporting the development of innovative water technologies, services and practices

- Continuing the implementation of the Water Opportunities Act and complement-

ary measures, including supporting the work of the Water Technology Acceleration Project, which will help grow globally competitive companies and promote Ontario's water sector, while generating solutions that can help protect and improve the Great Lakes environment.

- Continuing to support the research, development and demonstration of new innovative environmental technologies, services and practices.
- Supporting Ontario sustainable food production, jobs and innovation, decreasing reliance on phosphorus imports and improving efficient use of phosphorus for improved soil management and crop growth, through supporting opportunities to pilot new and innovative technologies for enhanced and improved nutrient recycling, including phosphorus recovery from sewage, manure and compost.

- d) Developing a long term economic development strategy that will establish a series of goals and actions to make a cohesive and globally competitive water sector.
- e) Strengthening international linkages to support research, development and commercialization in the water field – by building alliances with jurisdictions, highlighting Ontario’s strengths at trade shows and conferences, and participating in national discussions on a proposed international environmental technology verification approach.
- f) Sharing success stories on community-based approaches, to encourage and support adoption of best practices.
- g) Encouraging industrial practices that minimize water consumption, recycle water, use reclaimed wastewater or stormwater for business operations or processing, and apply low impact development to stormwater management. (e.g., permeable parking lots).
- h) Encouraging development and use of green technologies and demonstrating leadership

The Province’s “Celebrate Ontario” fund supports events in many of Ontario’s Great Lakes communities. Festivals receiving support for Ontarians and visitors to enjoy in 2012 include:

- Redpath Toronto Waterfront Festival
- Toronto International Dragon Boat Festival
- Mississauga Waterfront Festival
- 1000 Island Extreme Sport Weekend
- Rideau Canal Festival
- Belleville Waterfront and Ethnic Festival
- Welland Rose Festival



Sir Adam Beck Generating Complex on the Niagara River. (Ontario Power Generation)

in green building, green infrastructure such as coastal wetlands, and water and energy conservation.

- i) Working with other orders of government to promote investments that contribute to the growth of Ontario’s green economy, including opportunities for research and commercialization of green technologies and practices.

Promoting tourism and recreation opportunities

- j) Developing, supporting and enhancing partnerships to help support waterfront development for recreation and tourism attractions and activities.
- k) Supporting and helping fund municipal waterfront and downtown restoration projects to increase community and visitor access to the waterfront.
- l) Promoting and supporting waterfront venues, attractions and activities.
- m) Supporting waterfront festivals, sporting events and heritage attractions that build Great Lakes engagement and foster shoreline sustainable use.
- n) Promoting an environmentally responsible cruising industry and working with the federal government to remove barriers to Great Lakes cruising.

Economic research such as the recent Ontario study (ICF Marbek, 2010) indicates significant economic returns from actions that keep the Great Lakes healthy. The study shows:

- We can expect an economic return of up to two dollars for every dollar we invest in actions to prevent high levels of nutrients from entering the lakes.
- Expected economic returns are up to 35 dollars for every dollar we invest in protecting coastal wetlands.
- The economic benefits of preventing invasive species from entering the Great Lakes easily outweigh the costs of dealing with the aftermath of an invasion.

The study looks at the benefits we get from the Great Lakes in terms of recreation, water use for residential, industrial, and agricultural purposes, property values, and other ecosystem services. Findings suggest that Ontario's investments to restore and protect the Great Lakes are wise investments that benefit the economy as well as the environment.

For details please see:

www.ontario.ca/healthygreatlakes

located along the waterfront trails of the Great Lakes and the St. Lawrence River coasts.

- r) Encouraging increased public access to waterfront areas where possible, to enhance community and tourist appreciation for the Great Lakes as a focal point in the province.
- s) Encouraging opportunities for sustainable public use of water-based, coastal and nearshore recreational, cultural and heritage resources.
- t) Conducting ongoing tourism marketing, locally and internationally, featuring the Great Lakes as a tourism icon, and enhancing marketing strategies to increase support for and enjoyment of Great Lakes-themed activities and festivals, through initiatives such as the Ontario Tourism Marketing Partnership Corporation, Regional

- o) Continuing to promote sustainable waterfront trail systems that link communities and support local economies around the Great Lakes through walking, cycling and other trail activities, such as the Lake Erie Bike Route that connects to Ontario's Waterfront Trail via the Greater Niagara Circle Route.
- p) Promoting water-based tourism and development, led by Regional Tourism Organizations that border the Great Lakes and St. Lawrence River.
- q) Supporting cycling tourism for exploration of local communities while providing significant contributions to local economies



Fishing near Pickering on Lake Ontario (Ontario Tourism Marketing Partnership Corporation, Kas Stone, 2010)



Niagara Falls (Ontario Tourism Marketing Partnership Corporation)

Tourism Organizations, and Celebrate Ontario Grant Program.

- u) Supporting the development of training programs to improve the quality and quantity of shore excursion activities in the Great Lakes.
- v) Promoting “staycations”, encouraging families to vacation closer to home and to enjoy Great Lakes experiences.

Ensuring environmentally sustainable resource use

- w) Continuing support for the sustainable management and harvest of Ontario’s Great Lakes commercial and recreational fisheries resources that provide benefits to society associated with wholesome food, recreation, cultural heritage, employment, and a healthy aquatic ecosystem.

- x) Further exploring the value of ecological services to Ontario’s economy. Ecological



Commercial fishing on Lake Huron. (Ministry of Natural Resources)



The Island Queen cruise boat near Kingston. (Ontario Tourism Marketing Partnership Corporation, Bergeron)

services are the many benefits that a healthy ecosystem provides. For example, the Great Lakes and St. Lawrence River ecosystem purifies our water and air, breaks down our wastes, provides food sources and recreation opportunities, reduces the risks of flood damage, and moderates extreme weather.

- y) Supporting improvements to agricultural and rural run-off management by enhancing adoption of environmental farm practices and plans. This may include working with researchers and industry to enhance the development and adoption of best management practices in key sectors and geographic regions.

Conclusion

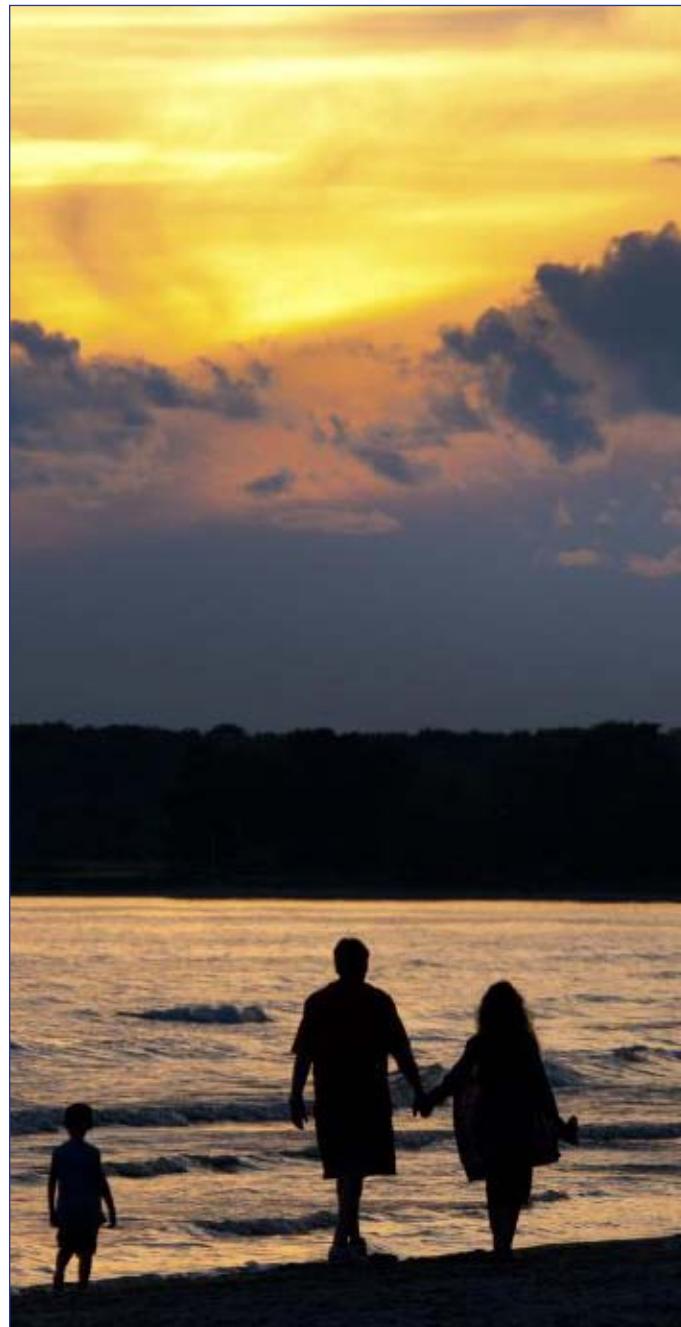
All Ontarians share in the benefits that the Great Lakes and St. Lawrence River, their coasts and their watersheds provide for us. We also share a fundamental responsibility to protect and ensure their long-term health. There are ways that every citizen, every business, every organization and every sector can make an important contribution.

We hope that this Strategy reflects Ontarians' interests in the Great Lakes. Only by working together and cooperating with a shared focus and determination can we protect the Great Lakes.

All of our successes over the last four decades prove that while the Great Lakes may face complex challenges, working together, we can solve them. The people and the government of Ontario have the vision, the Goals and the tools to help ensure the Great Lakes are healthy, strong and resilient. The stakes are great but so is our commitment.

This draft Strategy proposes Ontario's priorities for action to maintain Great Lakes that are drinkable, swimmable, and fishable, for our generation and for generations to come.

Thank you for taking the time to explore the draft Strategy. We welcome your feedback and your participation.



Sunset at Sandbanks Provincial Park. (Ontario Tourism Marketing Partnership Corporation, Bergeron)

Being a Great Lakes Guardian

Ontarians depend on the Great Lakes for nearly every aspect of our health and well-being. And the Great Lakes depend on Ontarians. Each of us has a responsibility to keep our Great Lakes healthy. Why? When the Great Lakes are healthy, Ontario is strong – able to provide a high quality of life for individuals and communities, and attractive to business and visitors.

Each of us can take actions to help us leave the lakes in better shape than our generation found them. Whether you live in a busy city, on a farm or in a rural hamlet, wherever you are

in Ontario, you can be a Great Lakes guardian, someone who voluntarily helps take care of the Great Lakes.

What You Can Do: Tips for Being a Great Lakes Guardian

- Get involved in a cleanup or restoration project in your community. Look for events to clean up beaches, wetlands, ravines and shorelines, or organize your own.
- Join a group that involves community members in monitoring local frogs, turtles, butterflies, wildflowers or songbirds – through a conservation authority or naturalist group. If you love fishing, consider getting involved in your local Fisheries Management Zone Advisory Council.
- Learn about invasive species that are threatening the Great Lakes so you can help identify new infestations and prevent unwanted invasive species from spreading. Call the Invading Species Hotline at 1-800-563-7711. Never release pet fish, turtles, baitfish or other live creatures into the natural environment.
- If you own property, remember that what you put on your lawn, garden or sidewalk can all end up in the Great Lakes. Avoid over-using road salt in winter and fertilizers in summer. Ask yourself, “Can I use less of this product? Is there an environmentally friendly alternative?”
- Safely get rid of products that can harm the environment, such as fluorescent bulbs (which have mercury) and electronics. Don’t flush unwanted medications down the toilet – return them to a pharmacy.
- If you see a spill, call the Spills Action Centre at 1-800-268-6060.
- Conserve water and energy – most of it comes in some way from the Great Lakes!
- If there are children in your life, help them connect with the Great Lakes at a Children’s Water Festival, a fishing derby, a conservation program at the zoo – or just by giving them the chance to explore the nature around them.
- Learn about government agreements and programs to protect and restore the Great Lakes. Check out Ontario’s Environment Bill of Rights Registry for opportunities to have your say in public consultations on the Great Lakes (and other environmental issues).
- Most important of all – check out the Great Lakes themselves. A waterfront walk, a trip to the beach, a little fishing? These magnificent lakes will nourish your soul.

Resources for Learning More About the Great Lakes

To learn more about your drinking water, see:
www.ontario.ca/drinkingwater

To learn more about local beach conditions, Lake Ontario Waterkeepers has a beaches app and website with beach descriptions and current conditions: www.thewswimguide.org. To learn more about the beach “Blue Flag” program, see www.blueflag.org.

If you like fishing, the Ministry of Natural Resources’ Fish Ontario page is at www.mnr.gov.on.ca/en/Business/LetsFish. *The Guide to Eating Ontario Sport Fish* (www.ontario.ca/fishguide) explains how to safely eat the fish you catch.

The Ontario Ministry of the Environment’s website can be found at www.ene.gov.on.ca.

The Ontario Ministry of Natural Resources’ website can be found at www.mnr.gov.on.ca.

The Ontario Ministry of Agriculture, Food, and Rural Affairs’ website can be found at www.omafra.gov.on.ca.

To learn more about the Ontario laws and regulations that relate to the Great Lakes, please visit Service Ontario’s e-laws website (www.e-laws.gov.on.ca). Ontario’s Environmental Registry (www.ebr.gov.on.ca) contains notices about proposed changes to legislation, regulations and policies related to the environment, by provincial ministries covered by the Environmental Bill of Rights.

To learn about federal and Canada-U.S. programs on the Great Lakes, including State of the Lakes Ecosystem Reports and status of the Canada-U.S. Great Lakes Water Quality Agreement, some useful websites include Environment Canada (www.ec.gc.ca), the United States Environmental Protection Agency’s Great Lakes National Program Office (www.epa.gov/glnpo), and the two agencies’ shared Great Lakes website (www.binational.net). The International Joint Commission is another important group for a binational perspective on Great Lakes (www.ijc.org).

Another good website on Great Lakes is the Great Lakes Information Network (www.great-lakes.net).

To request a printed copy of this draft of Ontario’s Great Lakes Strategy in English or French, or in an alternative format, please contact the Ministry of the Environment’s Public Information Centre:

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